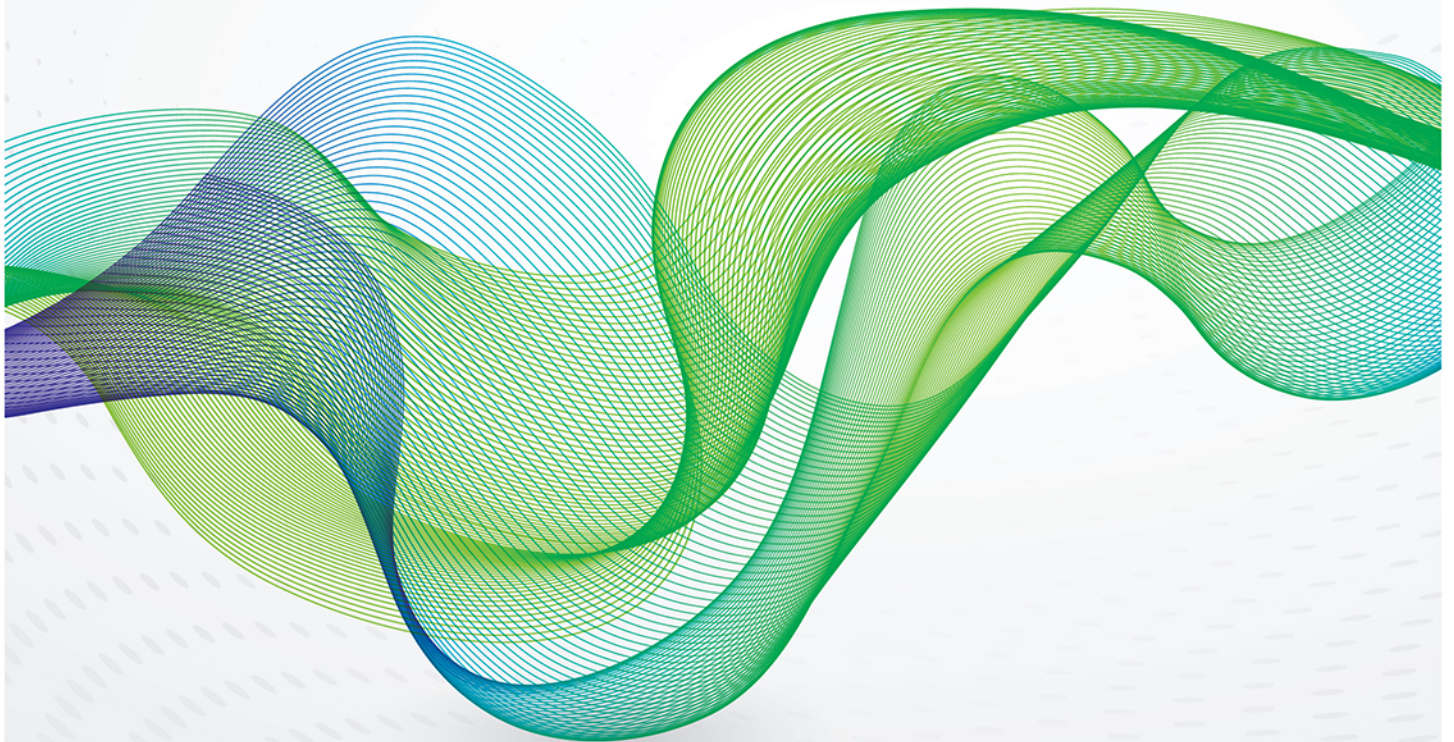


October 2019

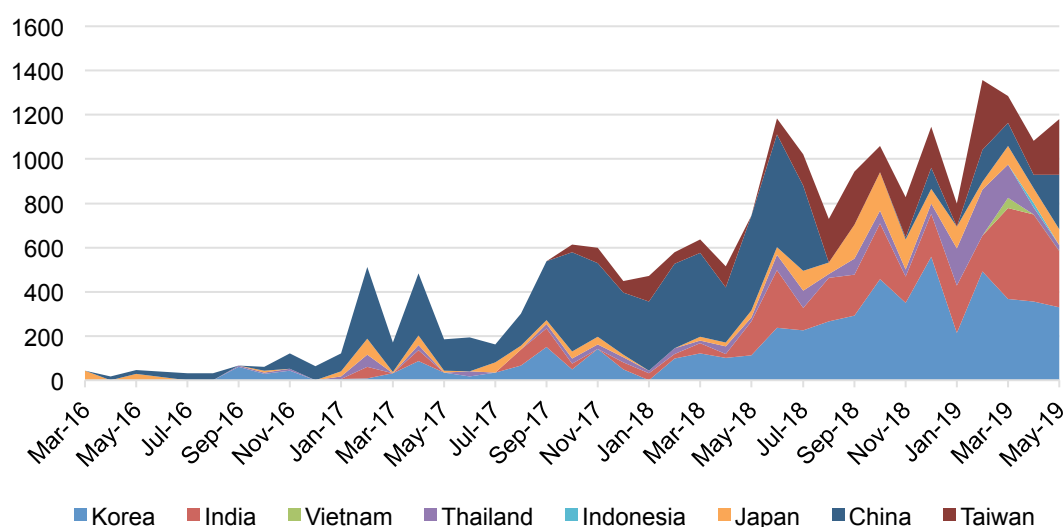
Murban: A benchmark for the Middle East?



1. Introduction

The Gulf producers are the world's largest crude oil exporters, with most of their crude – sold via long-term contracts – flowing eastward. But oil market dynamics are shifting, reinforcing certain existing trends and creating new ones: East of Suez crude balances over the next decade highlight Asia's growing crude import requirement; light crude exports (particularly US grades) to Asia keep increasing (see Figure 1); crude slates are getting lighter, reflecting the shift in product demand patterns, especially due to the International Maritime Organization 2020 low-sulphur bunker fuel requirements; and Asian trading participants are becoming more active 'price makers' rather than 'price takers'.¹

Figure 1: US crude flows to Asia, kb/d



Note: kb/d = thousand barrels per day.

Source: US EIA.

As the region's cushioned position unravels in the face of rising oil production from other corners of the world, Gulf national oil companies (NOCs) face a fresh challenge: how to remain competitive in their largest and most profitable market. The response and strategies necessary to confront these challenges are more layered than simply keeping prices low. As Asia's refiners buy increasing volumes of crude oil from previously inaccessible origins, they are also exposed to dynamic pricing and hedging options. The crude oil pricing system is key to these dynamics.

Historically, the region's Asia-bound sales have been priced against two sour markers: Platts Dubai and Oman. But recently the traditional benchmarks have been challenged: key producers such as Oman and Saudi Arabia have amended the benchmarks used in their pricing formulae, while China has developed its own crude oil futures contract.²

Against this background, Abu Dhabi is seeking to develop a light crude reference marker of its own. This would be to price both its own exports and to develop a regional benchmark to reflect shifting Asian fundamentals and shifts in global crude oil flows.³ Underpinning this ambition is the role of Murban – a light high-sulphur crude oil (40° API gravity and 0.7% sulphur) produced onshore in Abu Dhabi. Several factors are driving the proposed move:

¹ Adi Imsirovic, 'Oil markets in transition and the dubai crude oil benchmark', *Oxford Energy Comment*, October 2014.

² Bassam Fattouh, 'What next for Asian benchmarks?', *Oxford Energy Comment*, July 2018.

³ Bassam Fattouh, 'What next for Asian benchmarks?', *Oxford Energy Comment*, July 2018.

³ Argus, 'Crude oil: The Murban makeover', 9 August 2019; S&P Global Platts, 'ADNOC, ICE, to launch Murban crude futures on Abu Dhabi exchange in H1 2020', 13 September 2019.



- Given increasing light crude flows within and into Asia, the market will naturally gravitate toward an informal price reference marker, with or without a Middle East benchmark for light crude. One such crude appears to be West Texas Intermediate (WTI) Midland.⁴ Refiners in Asia have added Midland, Eagle Ford, Domestic Sweet (DSW), Bakken, and Louisiana Light Sweet (LLS) into their linear programming (LP) models as of 2018. The adoption of US crude into Asian refining models is now far easier due to the lack of Official Selling Price (OSP) setting methods, destination restrictions, and the existence of well-established paper markets. With growing WTI flows, the grade could ultimately become a new Asian benchmark.⁵
- With almost 50 million barrels of production per month and accounting for over 50% of the UAE's total oil production, Murban is one of the largest crude grades originating from the Middle East. By comparison, Forties – the largest crude stream in the UK and part of the Brent pricing basket – has a monthly production of 13.5 million barrels and has been declining over the years.
- A new \$3.1 billion Crude Flexibility Project (CFP) at the 417,000 b/d Ruwais 2 refinery complex – expected to be completed in 2022 – will allow Abu Dhabi National Oil Company (ADNOC) to run heavier grades (33.9° API Upper Zakum) at Ruwais, freeing up the lighter Murban grade for export.
- Murban is one of the most voluminous Middle East crude grades available to be traded openly on the spot market – a key prerequisite for benchmark status.
- ADNOC is currently in a growth phase, with plans to raise production to 5 million barrels per day (mb/d) by 2030; the company has signed agreements with ENI and OMV to develop a new trading venture (ADNOC Global Trading) focused on product sales and securing third-party crude feedstock for ADNOC's expanding downstream portfolio. ADNOC is also expanding storage capacity at Fujairah and overseas (via a stake in global storage business VTTI)⁶. ADNOC Global Trading can potentially support the development of new benchmark and provide liquidity.
- More than 90% of Murban is exported to Asia-Pacific. Exports are shared in the rough proportion of one-third ADNOC, one-third BP and Total, and one-third Asian firms. This is a well-diversified seller base, which is essential for the success of a benchmark. The diversified equity ownership of Abu Dhabi's crude production and the emirate's political stability reduce the risk of manipulation, although there are concerns that ADNOC Global Trading may possess a potential information advantage if it starts trading the Murban contract itself.
- ADNOC is seeking to change the way it prices Murban, moving away from a retroactive system to a forward pricing basis.⁷

Being primed for success does not, however, guarantee it. Many key questions remain: how will ADNOC exclude Murban from potential OPEC cuts? Will ADNOC lift destination restrictions on its crude? Liquidity is already split in the Middle East pricing complex between Platts Dubai and DME Oman: what impact will the introduction of a Murban benchmark have on formula pricing in the region, and will such a move impair liquidity, price discovery and risk management options? To explore these issues, this paper is split into several sections: **Section 2** examines a number of key trends in global crude trade flows; **Section 3** provides a snapshot of the evolution of Middle East crude pricing; **Section 4** assesses the crude quality spreads; **Section 5** assesses the viability of Murban as a regional benchmark, and identifies the challenges and next steps required for ADNOC to promote the grade to benchmark status.

⁴ Bloomberg, 'U.S. oil challenges Mideast sellers with Asian trading debut', 19 August 2019.

⁵ Assuming an eventual end to the current US–China trade war. Argus currently publishes WTI FOB Houston delivered China quotation, while we are told that Platts will be launching WTI Midland DES Asia assessment in October 2019.

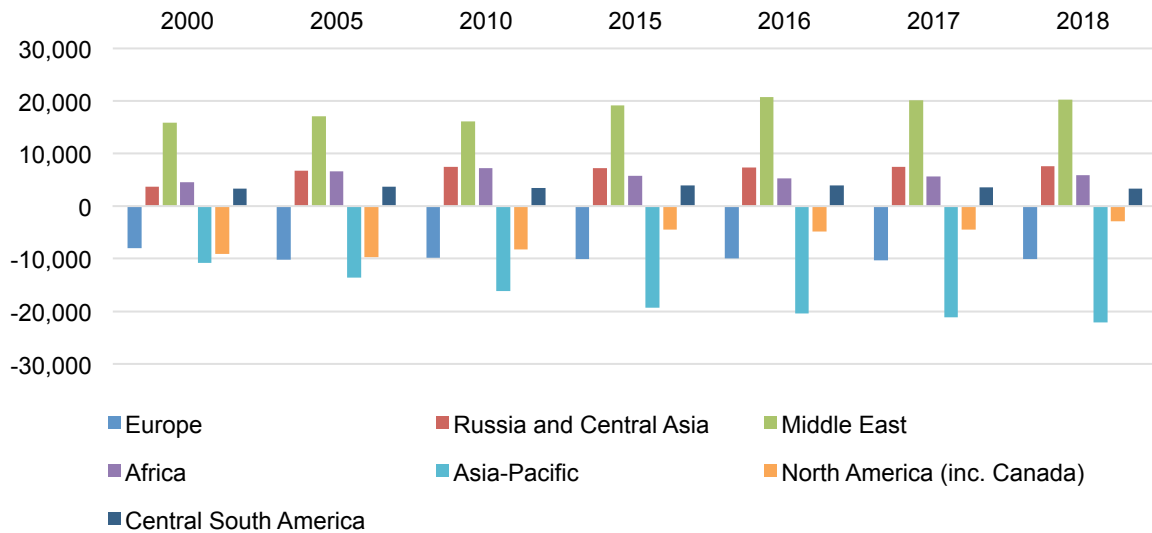
⁶ Shareholder structure will be: Vitol (45%), IFM Global Infrastructure Fund (45%), and ADNOC (10%).

⁷ S&P Global Platts, 'ADNOC crude pricing formula change "inevitable, much needed": refiners', 26 July 2019.

2. Shifting crude flows and rising competition in Asia

Significant shifts in global crude flows are expected over the next decade. In particular, oil flows are expected to continue their onward shift eastward (see Figure 2).

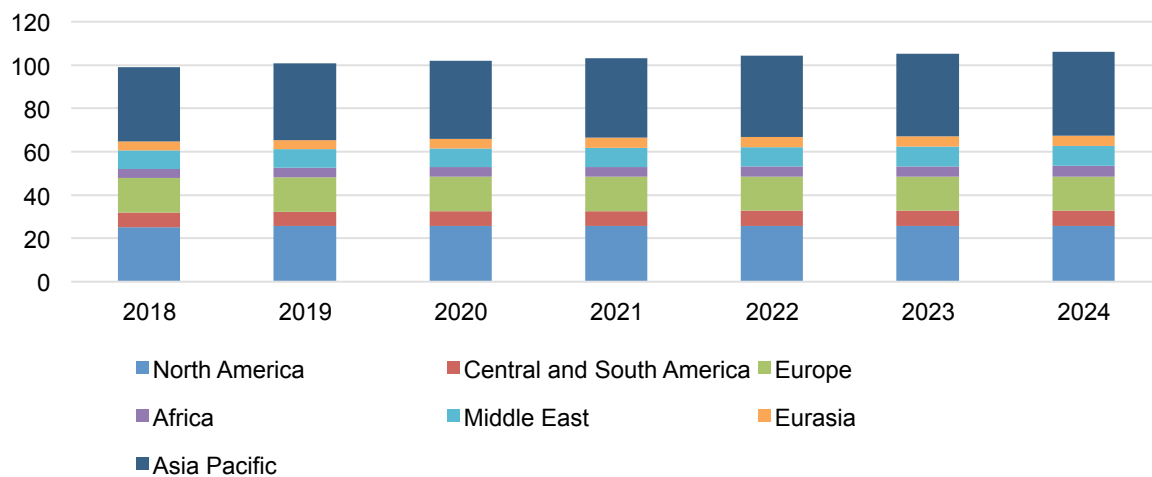
Figure 2: Crude surplus/deficit by area, kb/d



Source: ENI.

Despite risks to the prospects for oil demand growth - such as climate change and air pollution policies and technological changes - economic and demographic shifts in Asia (a rising middle class, population growth, and the shift to consumer-led economies) continue to drive demand growth. According to the International Energy Agency (IEA), oil demand is expected to grow to 106.4 mb/d by 2024 (see Figure 3), with China and India expected to account for over 45% of the 7.2 mb/d increase.

Figure 3: Global oil demand by region, mb/d



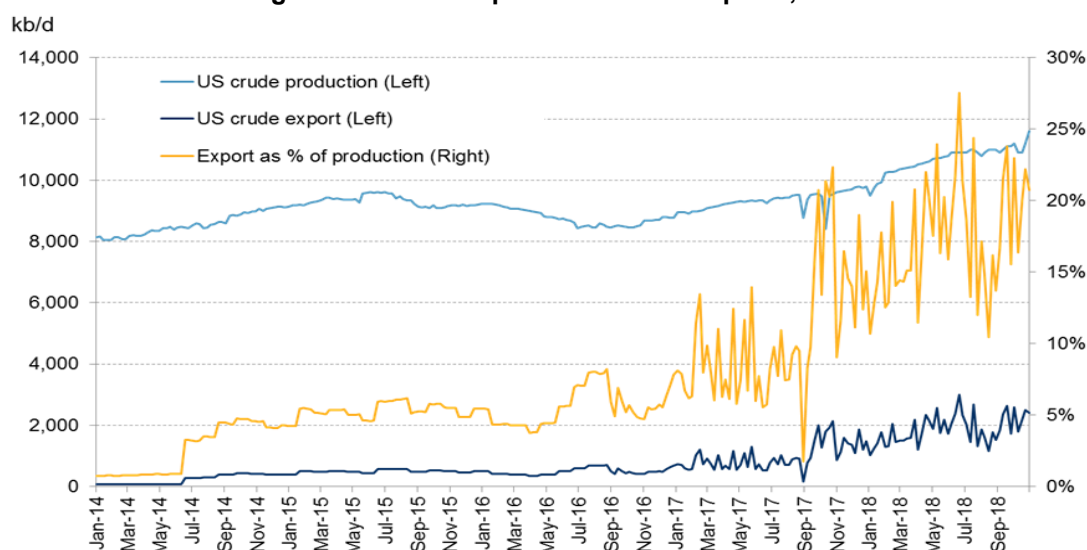
Source: IEA.

Net refinery capacity additions in the global downstream sector will also play their role in this eastward shift. Of approximately 9 mb/d of new capacity expected to come online over the next five years, around two-thirds of this capacity is due to be built in Asia.⁸ With Europe having already seen a number of refinery closures and asset divestments, the onslaught of highly competitive refining assets is likely to drive more closures, further impacting European oil demand balances and refining margins.

On the supply side, the rise of US crude production and exports has played a major role in shifting flows and regional balances. According to the US Energy Information Administration (EIA), US crude production averaged 12.3 mb/d in August 2019 – more than double 2010 levels. Since the lifting of the US export ban in 2015, exports have continued to grow, reaching an average level of 2 mb/d in 2018 (see Figure 4). Several knock-on effects have resulted:

- First, US refiners have reduced imports of light-yield crudes from the North Sea and West Africa. As a result, these barrels – mainly traded on a spot basis – have been diverted to Asia, earning their status as key ‘swing’ barrels for Asian refiners.
- Second, US Gulf Coast refiners – largely configured to process heavy, sour crude oils – have reached a shale ‘refining wall’, with light-end systems (naphtha) nearing their limits. As a result, growing volumes of light crude are being exported. With further debottlenecking projects and pipelines connecting US lower 48 onshore to export terminals, export volumes are set to increase. Changes at export terminals to accommodate an increase in cargo scale (especially LOOP and Corpus Christi) support this trend, with some optimistic estimates that US exports could reach 6 mb/d by 2022.⁹

Figure 4: US crude production and exports, kb/d



Source: S&P Global Platts.

The largest markets for US exports to date are Asia and Europe, volumes being roughly split evenly between the two. Despite the ongoing US–China trade war, US crude is becoming a more regular staple of Asian refinery diets. US flows to South Korea have begun to displace competing Caspian CPC blend as WTI–Brent spreads have allowed for arbitrage opportunities. US flows to Korea have also been supported by political factors such as Brexit risk (originally impacting Forties flows)¹⁰ and growing requirements for petrochemical feedstock as expansions increased over the past decade – a

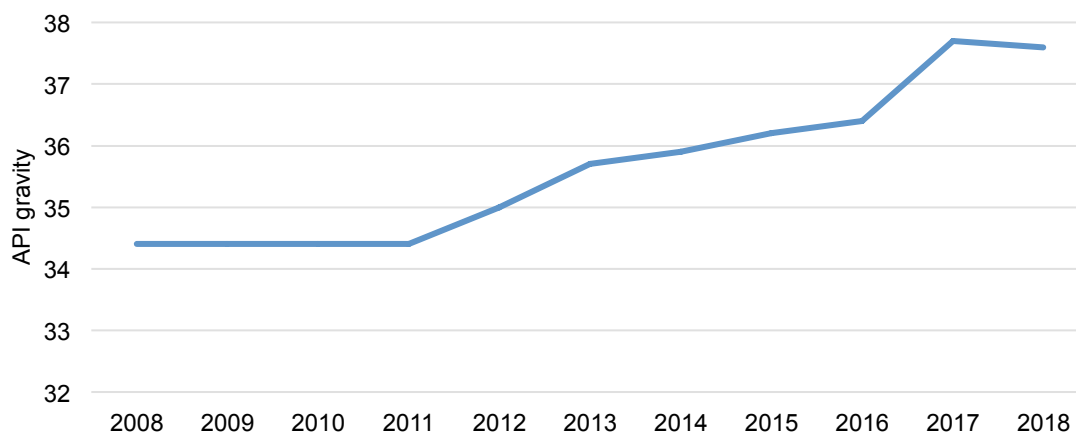
⁸ IEA 2019 oil outlook: “Oil 2019: Analysis and forecasts to 2024”.

⁹ Authors’ dialogue with several US producers.

¹⁰ In the meantime, the UK and Korea have signed a free trade agreement in case of Brexit: ‘UK and South Korea to sign ‘continuity free trade agreement’, *Financial Times*, August 2019.

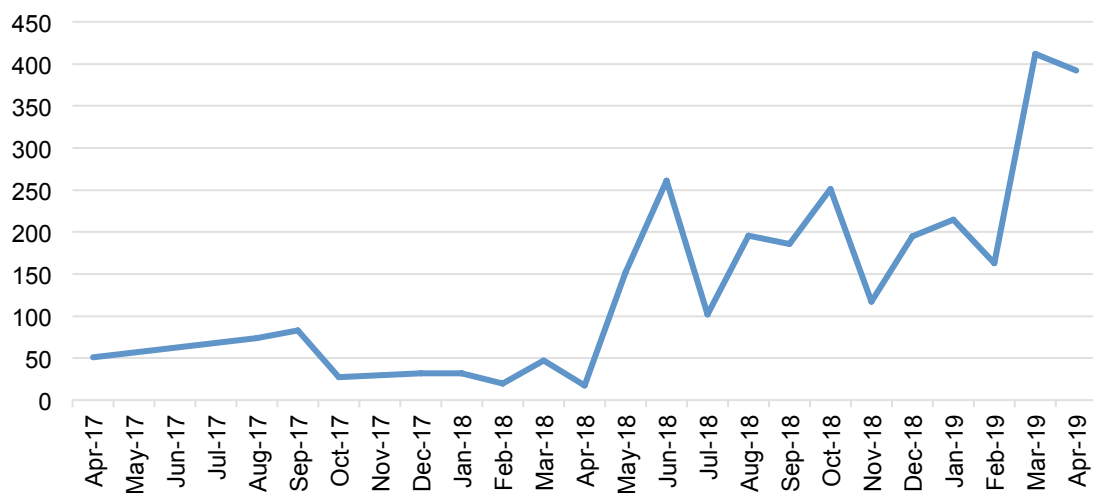
dynamic affecting the average gravity of crude intake (see Figure 5). Indian refiners – having started experimenting more heavily with US grades (see Figure 6) – are also signing annual term deals for US crude, the most noteworthy this year being the Indian Oil Corporation term deal with Equinor trading.¹¹

Figure 5: Average API gravity of refinery crude intake (Korea)



Source: IEA.

Figure 6: US crude exports to India, kb/d



Source: US EIA.

The growing role of US exports to both Asia and Europe is taking place while pipeline deliveries from Russia (via ESPO (Eastern Siberia–Pacific Ocean)) increase to China. Similarly, US sanctions against Iran and Venezuela have had the effect of redirecting greater volumes to China as US Gulf Coast refiners cut Venezuelan purchases, and Iranian flows previously destined for Europe are redirected to Asia.

Gulf producers have responded in turn. Iraq’s State Oil Marketing Company (SOMO) has clamped down on resales of its crude in a bid to gain greater control over the secondary market of Basrah Light.¹² Asia-bound OSPs for Basrah Light and Heavy (supplied since 2015) have been discounted to

¹¹ Reuters, ‘Indian Oil signs first annual deal for US oil’, February 2019.

¹² MEES, ‘Iraq’s SOMO pursuing strategic shift toward crude trading’, Volume 62, Issue 21, 24 May 2019.

protect market share, particularly in India, where Iraq is top supplier.¹³ Saudi Aramco has expanded its marketing operations and started to more aggressively target independent refiners in China,¹⁴ and Kuwait and Iran have offered Asian customers preferential credit terms.¹⁵

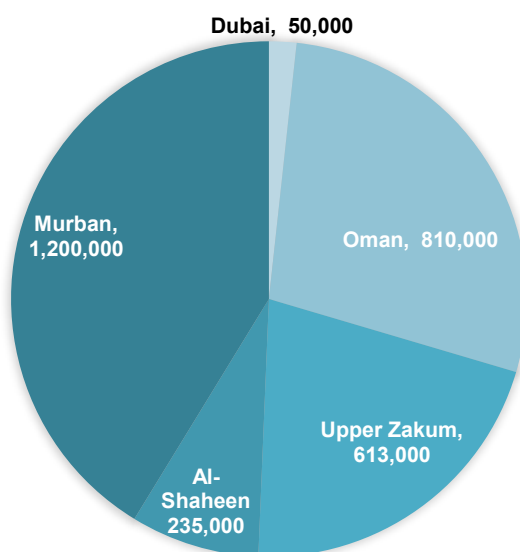
As Asia's role grows and crude trade flows continue their shift eastward, important questions arise for Middle East crude pricing: does the region need a new marker to reflect shifting fundamentals and trade flows? How have quality spreads reacted in response to shifting flows? And is Murban a viable candidate for regional benchmark status?

3. Evolution of Middle East crude pricing

Most Middle Eastern crude sales to Asia are priced against the Platts Dubai benchmark. Dubai (30.4° API gravity and 2.13% sulphur) was established as a price assessment by Platts in the mid-1980s following the cessation of Saudi Arabian Light crude trading on the spot market. Over the years, as production of Dubai crude fell, the contract underwent several 'upgrades' to increase liquidity by way of adding deliverable crudes to the Dubai basket, and by splitting a 500,000-barrel cargo into 20 partials of 25,000 barrels each.

Today, Dubai crude constitutes the smallest portion of the basket, with around 1.5 million barrels of production per month. Other grades added over the years include Oman, Upper Zakum, Al-Shaheen, and Murban, raising the total production profile of the basket to around 3 mb/d (see Figure 7).

Figure 7: Dubai basket and volumes of crude available for export, b/d



Source: S&P Global Platts.

A key attribute of Dubai remains its linkages to the Brent complex via the Brent/Dubai Exchange of Futures for Swaps (EFS) – a mechanism allowing refiners and traders to convert their Middle East crude exposure into the bigger and deeper global Brent futures pool. Another key feature of the benchmark has been the increase in liquidity of the Platts 'window' over the past decade (see Figures 8 and 9) as Asian players increased their presence in the window.

¹³ Ahmed Mehdi, 'Twin-track for oil producers will shake up Iran and Iraq', *Financial Times*, September 2019.

¹⁴ Rania El Gamal, Chen Aizhu, and Min Zhang, 'Saudi shifts strategy in China to boost oil sales', *Reuters*, 14 March 2019.

¹⁵ Adi Imsirovic, 'Asian Oil Markets in Transition', *Journal of Energy Security*, April 2014

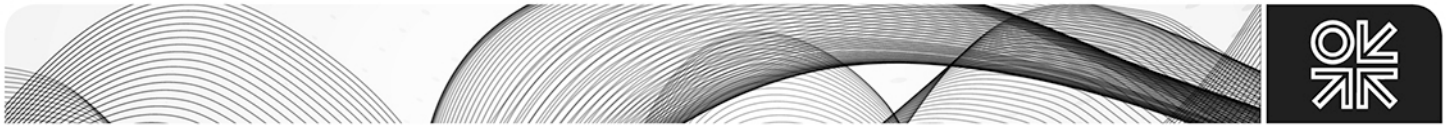
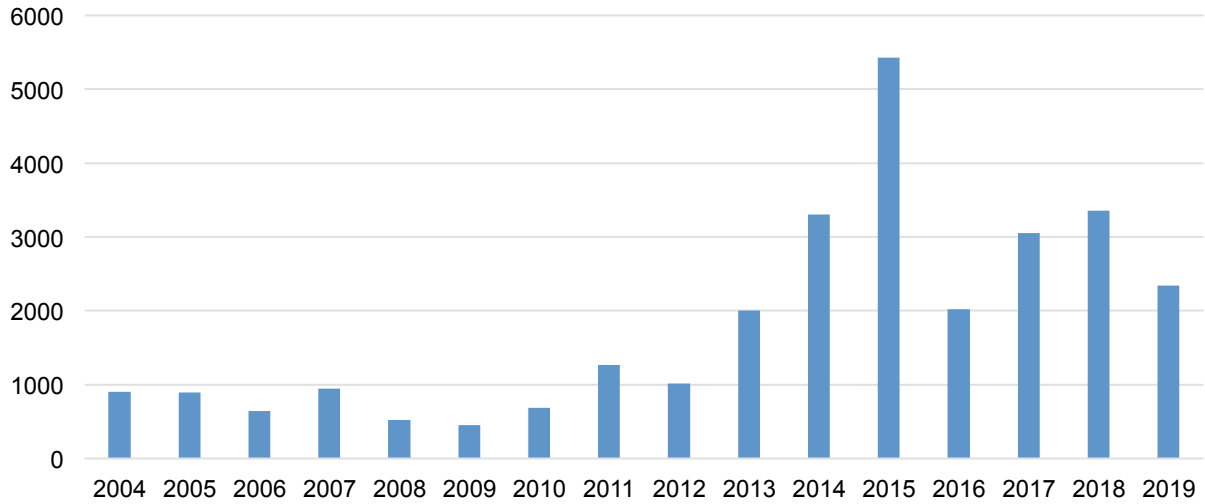
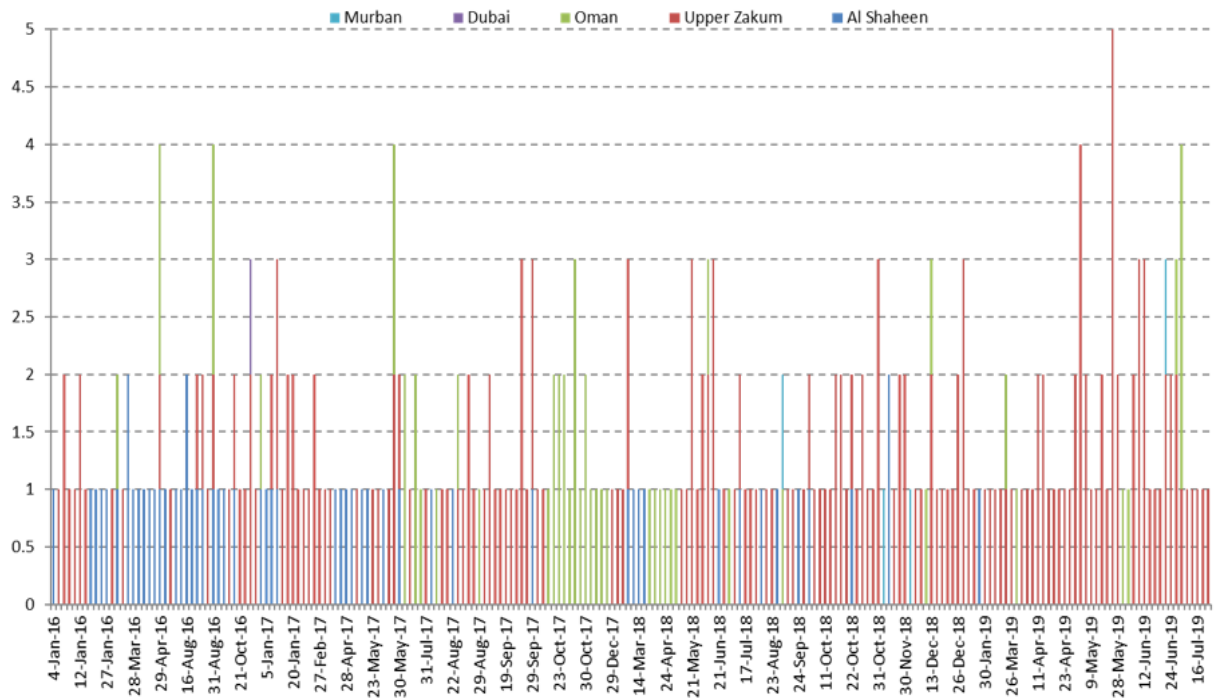


Figure 8: Number of trades reported in Platts Market on Close (MOC) assessment process



Source: S&P Global Platts.

Figure 9: Cargoes declared in MOC, January 2016–July 2019



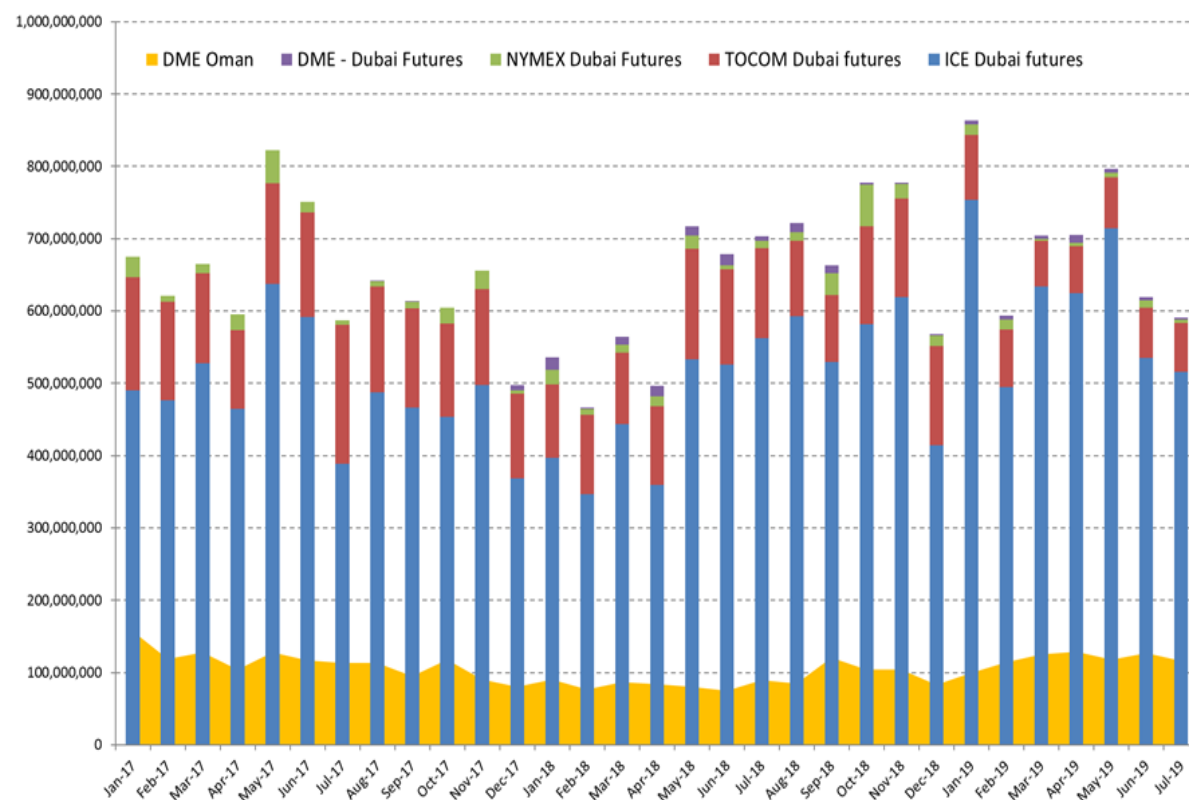
Source: S&P Global Platts.

Ultimately, all Asian-destined crude from the Middle East is priced off in one of the following options:

- Basis Platts Dubai only
- Basis Platts Dubai and Platts Oman
- Basis Platts Dubai and DME Oman (Saudi Aramco)
- Basis DME Oman only (Oman and Dubai).

Currently, Asian buyers of Middle East crude hedge their exposure largely via Dubai derivatives contracts¹⁶ on an over-the-counter (OTC) (bilateral) basis and one of the exchanges (ICE Dubai contract being the dominant exchange as per Figure 10 below).¹⁷ Buyers exposed to OSPs priced off Oman OSP have conventionally hedged this via Dubai as well, taking on the basis risk of the price difference between the Dubai and Oman markers. While this spread has averaged 31 cents per barrel in the past decade,¹⁸ the short-run differential can be highly volatile.

Figure 10: Volume of derivatives settled against Dubai



Source: S&P Global Platts.

But with nearly 80% of Oman flowing to China in any given month, prices for the grade can easily diverge by a dollar or more away from Dubai on certain days on Chinese-centric fundamentals that may or may not be in tune with crude markets in the rest of Asia. This price divergence requires buyers to add Oman hedging to their risk management portfolio in addition to Dubai,¹⁹ with buyers of Abu Dhabi crude being the exception.

As Asia contends with the growing volume of oil flowing into its refineries, various stakeholders have undertaken initiatives to broaden the pool of price risk management options available to the market beyond Brent–Dubai derivatives. China’s launch of its own crude oil futures contract in 2018 – hosted at the International Energy Exchange (INE) – was one such attempt.

¹⁶ The bulk of the derivatives are Dubai swap spreads or Brent/Dubai spreads (either as EFS, which is Brent futures against Dubai swaps, or B/D ‘swap-swap’ which is Brent swap vs Dubai swap).

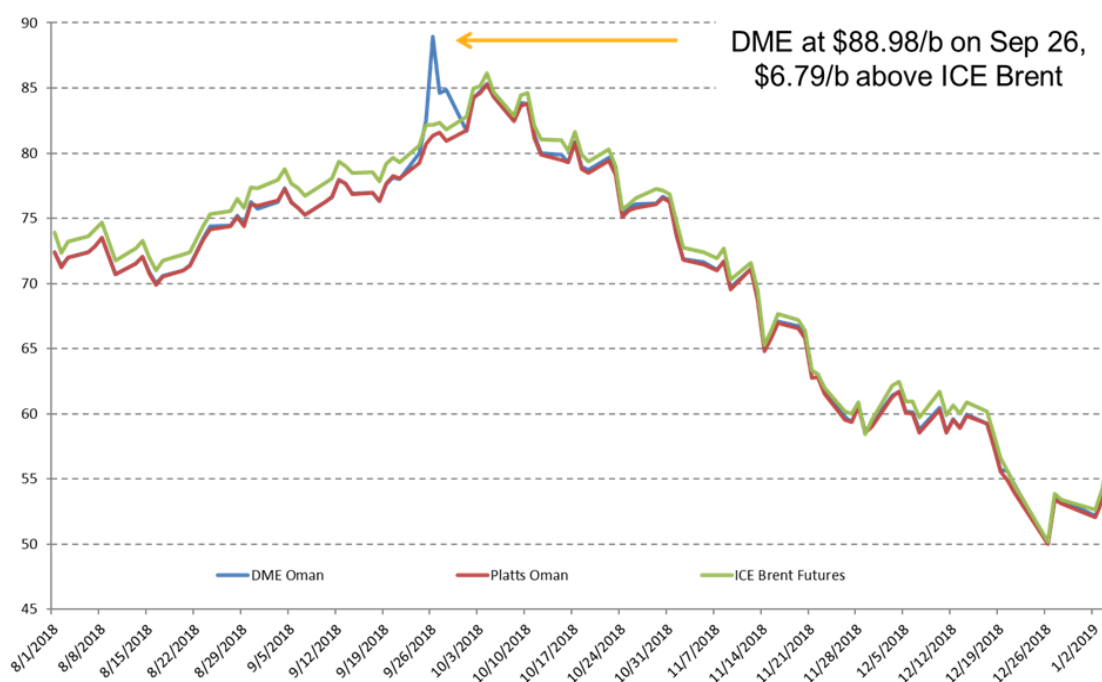
¹⁷ Since the 2008 financial crisis, most deals are done OTC through brokers and then ‘posted’ to be cleared on the exchange.

¹⁸ S&P Global Platts data: average of DME Oman and Platts cash Dubai assessments from 1 January 2010 to 31 August 2019.

¹⁹ Before Oman started trading on the Dubai Mercantile Exchange (DME), there was a lively market in ‘MOG/ Dubai spread’ (Oman OSP vs Dubai).

Saudi Aramco's shift to a DME + Platts formula in 2018²⁰ was another – in part an attempt to provide buyers with a Middle East-based price risk management tool for their crude exposure by way of the DME Oman futures contract. The move has faced its own set of challenges, with the DME seeing sharp price spikes on end-month short covering, and a limited translation from Oman to Brent for those employing the former in their risk management basket. On the one hand, refiners now have a dedicated futures tool to hedge the Oman leg of their exposure to eradicate the Oman–Dubai basis risk. On the other, low liquidity during periods of high demand has resulted in sharp price swings toward the end of the month on the DME (see Figure 11),²¹ discouraging risk-averse refiners from readily adopting this mechanism.

Figure 11: Middle East crude pricing, \$/b



Source: S&P Global Platts.

The lack of a forward paper market for Oman and a viable Brent–Oman instrument also adds difficulty to the case for moving toward Oman-based hedging. In the case of Dubai, an active forward paper market in the form of the Brent–Dubai and intermonth Dubai spreads allows traders to roll over their monthly positions or convert them to Brent contracts.²²

For now, the DME Oman contract is viewed exclusively as the most liquid and viable means of accessing physically deliverable Oman crude, and the volumes traded on the exchange are tied almost solely to this exercise. Despite the Saudi Aramco shift in its official pricing formula to DME Oman, the trading volumes on the exchange have been disappointing. In this context, Dubai remains an Asian trader's primary tool for hedging Middle East crude flows to the region.

²⁰ Bassam Fattouh, 'What next for Asian benchmarks?', Oxford Energy Comment, OIES, July 2018.

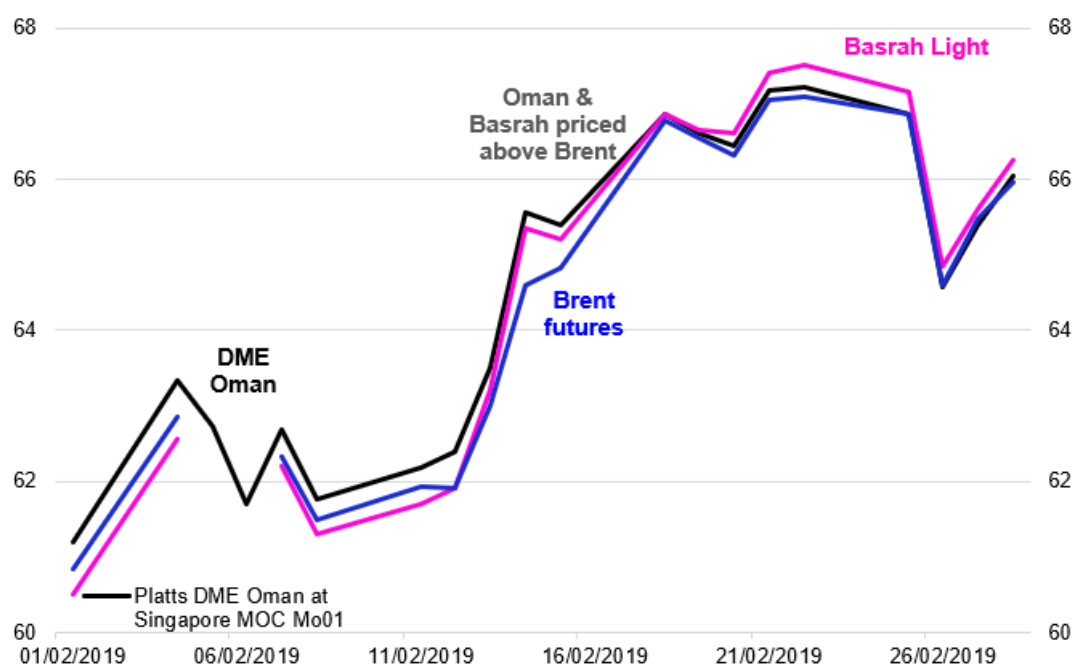
²¹ For a detailed discussion on this issue, see Adi Imsirovic, 'What next for Asian Benchmarks? – A footnote', Oxford Energy Comment, OIES, November 2018.

²² While the number of participants in the Dubai partial market is relatively small (Dubai partials hardly ever trade outside the 'Platts Singapore' window), participants can hedge their Dubai exposure with Brent futures and then convert this position into Dubai swaps, via the EFS Brent–Dubai spread.

4. Crude quality spreads

Prior to 2018, it was a given that lighter crudes would price higher than heavier ones. Therefore, Middle Eastern grades with their high sulphur content would price lower than Brent-similar crudes that tend to be sweeter. However, the US imposition of sanctions on Iran and Venezuela in 2018–19, combined with oil production cuts from OPEC, led to acute shortages of high-sulphur heavy crude grades during that period, with prices of low-quality crudes surging to premiums against Brent, Murban, WTI, and other such grades (see Figure 12). Iraqi Basrah crude traded at Brent-comparable premiums for several months, and Qatar’s Land and Marine (light and heavy) crudes inverted several times between 2018 and 2019.

Figure 12: Price/quality inversion for Middle East crudes, Q1 2019



Source: S&P Global Platts.

In this environment, when conventional ideas about crude quality lose their hold on prices, a light-specific reference marker is needed to accurately pinpoint the divergence in quality premiums between crudes. In other regions, such quality spreads have sprung up naturally alongside existing light crude benchmarks: for example, the WTI/Mars spread in the US, or ‘Urals CFD’ (Dated Brent vs Urals) in the Mediterranean.

In Asia, the existing quality spread of reference is currently Brent-Dubai.²³ But the spread is indicative of multiple sentiments as it spans two benchmarks across quality, geography, time,²⁴ and different market fundamentals and geopolitical bases.

Moreover, the Brent–Dubai spread is sensitive to the flow of Forties crude,²⁵ which can see its entire monthly programme of 6–7 million barrels shipped to North Asia in certain months on the whim of a

²³ Either as EFS (Brent futures vs Dubai swap) or as swap–swap (Brent vs Dubai swaps).

²⁴ Take Brent–Dubai EFS for example: October EFS is a differential between October (loading) Brent and October Dubai swap (during October, December Dubai is trading). So, effectively it is a spread between October loading Brent and December loading Dubai prices.

²⁵ The spread is designed to regulate the flow between the two markets, but it can be problematic when the flow is in the hands of very few players.

small group of buyers.²⁶ Additionally, due to far superior liquidity and market depth, Brent prices respond more quickly and aggressively to global energy-related headlines, and so are frequently disconnected from Asian-centric oil fundamentals.²⁷

Dubai, being medium in API and high sulphur, is several steps removed from Brent, which is light and low sulphur. A middle step that simplifies the number of confounding factors present in the Brent–Dubai spread could meet the evolving needs of incoming light crude flows into Asia. It would also pave the way for the development of Asia-specific derivative trading, a much-needed step to hedge the increasing volumes being produced and consumed in the region.

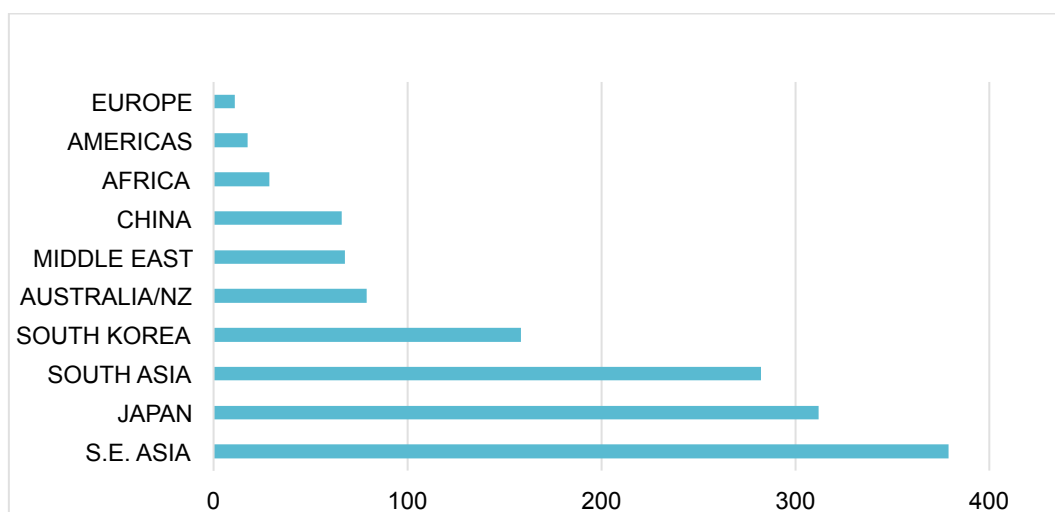
As previously mentioned, in the past several years the usage of light sour crude grades in the Asian slate has gone up significantly. Buyers have shown greater affinity for light sour crudes, including Murban, Das, QL, ESPO, CPC, Forties, and WTI light blends such as Midlands. Russia’s ESPO Blend is another liquid stream exported via pipelines from Kozmino Bay in the Far East, as are several other crudes that are produced regionally.

5. Murban as a viable benchmark: Challenges and next steps

Against this background, Asia’s increasing global trade flows warrant a reference marker that can be compared with minimal differences to existing global benchmarks from Europe and the US, namely Brent and WTI.

Murban is a highly fungible crude: its specifications and API put it in the middle of the basket of global light sour crudes with a high distillate and naphtha yield. The grade has been run by around 60 refiners in Asia and is one of the most fungible crudes East of Suez (Other comparable grades such as Das Blend can be taken by only 30 or so refiners in Asia, and Upper Zakum by 10 or 15, for instance). It is imported into almost every country in North, Far East, South East and South Asia (see Figure 13).

Figure 13: Murban offtake by region, 2016–19, million barrels



Source: ClipperData.

As a testament to its widespread usage, the Aramco/Petronas RAPID refinery in Malaysia bought several million barrels worth of Murban over a period of two to three months on the spot market as a

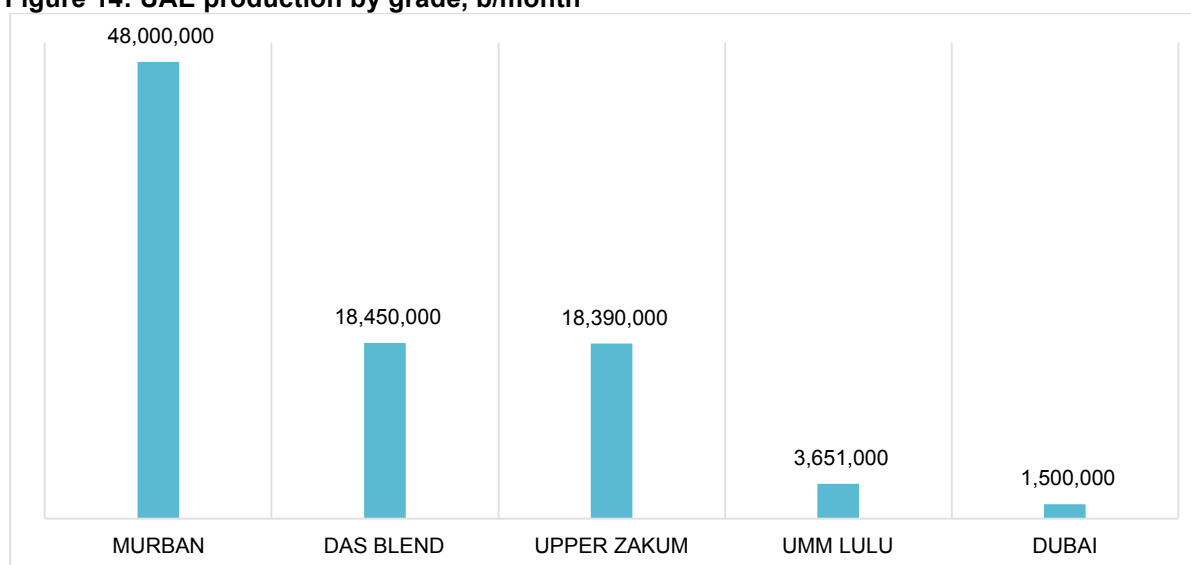
²⁶ 91% of Forties production in August 2019 was shipped to China (S&P Global Platt cFlow data). These flows, however, may be disrupted by Brexit, which will take Forties out of the EU–Korea free trade agreement.

²⁷ For a discussion on factors influencing the spread, see Adi Imsirovic and Ben Pryor, ‘IMO 2020 and the Brent–Dubai spread’, OIES, September 2018.

quick replacement for its usual diet of Arab Medium and Basrah Light, after a recent fire limited its crude processing capabilities.²⁸ The crude is probably exceeded in its usability across the continent only by Basrah Light (a high-sulphur, medium-gravity crude produced by Iraq). According to our conversations with traders, equity holders in Murban with refining systems in Europe sometimes also ship the grade westward into their own systems, economics permitting.

Murban is not the only lighter lower-sulphur option available to Asian refiners, but its liquidity (see Figure 14), usability, and spot availability are its most attractive features. It is also frequently used in Asia as an informal baseline for trading several other light crudes available on the spot market. This includes ADNOC's Umm Lulu and Qatar Land.

Figure 14: UAE production by grade, b/month



Source: S&P Global Platts.

Murban values are essential to the working of the arbitrage of North Sea barrels into Asia. As a very rough rule of thumb, if Forties can land into Asia at a \$1 discount to Murban, refiners are likely to buy the delivered North Sea grade. Indirectly, the Murban premium thus impacts the Brent–Dubai spread itself.

The spread between Murban and ESPO is frequently compared by refiners in China and Japan when making monthly purchasing decisions, especially for Russian Sokol and Sakhalin Blend. Saudi Extra Light and Murban pricing is compared by both Aramco and ADNOC – they look to each other and track expectations when setting prices every month. Murban is an effective gauge for Saudi Aramco to check how well light crude is trading on the spot market, since Aramco's own crude is not tradeable. Condensate trading also takes Murban prices into account. In this regard, it already functions as an informal reference marker for light sour crude grades exported from the Persian Gulf to Asia and is certainly the most liquid of the lot.

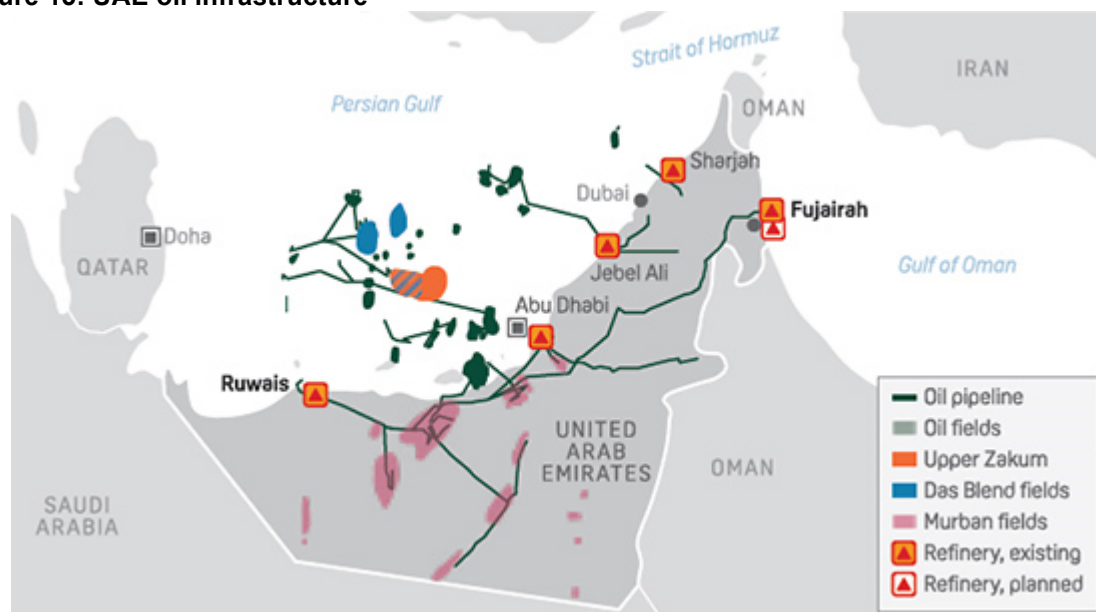
Other alternatives face issues of liquidity, geography, or an undiversified user base. ESPO, although sufficiently voluminous, is almost wholly imported into China. Regional sweet crudes produced in Malaysia, Indonesia, and Oceania are highly prized within Asia's refineries for their quality, and are closely linked to Brent pricing, but suffer from low volumes. Malaysia's Kimanis crude is one of the largest regional grades currently in production, but its output of around 8 million barrels per month presents a hurdle to benchmark status.

Additionally, logistics in the UAE are robust: VLCC loadings operate smoothly and reliably, and Fujairah's strategic position as a key storage hub (see Figure 15) is growing as more capacity is

²⁸ S&P Global Platts, 'Malaysia's Petronas buys Murban crude for Oct loading', 26 August 2019.

added (including plans by ADNOC to build a 42 million barrel underground crude storage facility for 2022).²⁹

Figure 15: UAE oil infrastructure



Source: S&P Global Platts.

Murban is a part of the Dubai benchmark itself. Even though the quality premium of Murban over Dubai is significant,³⁰ its introduction was a ‘safety valve’ designed to prevent a possible price squeeze in the Dubai benchmark. However, since late 2018 Murban has made a regular appearance in the Platts MOC assessment process as well as the deliverable cargo declared on Dubai or Oman partials. In late 2018, Murban’s delivery on Platts Oman partials highlighted the inversion of light/heavy quality spreads in the Middle East–Asia dynamic.

Since late 2018, full cargo bids and offers have also sprung up on a monthly basis, used by buyers and sellers to send strong, frequent price signals to the market. Since January 2019, 15 full cargoes (7.5 million barrels) of Murban crude have traded (outside the Platts Dubai MOC mechanism) – the first of its kind. These bids, offers, and trades for full cargoes are indicative not only of the market’s readiness to use the grade as a lead indicator for the state of the Asian crude market, but also of the fact that there is a divergence of pricing fundamentals between light and heavy grades. The Platts MOC trade activity is closely tracked by ADNOC and other NOCs to check for OSP setting indications.

In this regard, Murban is one of very few light Middle Eastern grades to be voluminous, widely adopted, available for spot trading and open to a potential forward paper market. Moreover, when discussing the subject with equity holders, traders, and refiners in Asia, there seems to be a high degree of optimism and willingness in the market to see the development of the grade as a reference marker. Crude traders in Asia believe the grade could grow to develop a natural forward market in the form of a Brent-linked price or intermonth paper spreads.

However, the move to establish Murban as a benchmark cannot be made without the relevant stakeholders addressing some key obstacles that currently stand in its way of becoming the new face of light Asian crude. There needs to be a concentrated effort from the UAE government, ADNOC, and

²⁹ Petroleum Intelligence Weekly, 9 August 2019.

³⁰ Murban commonly trades at least \$2 over Dubai.

Murban equity holders to put in place mechanisms that will set it up for success. The challenges that need to be given consideration include (but are not limited to)³¹ the following.

Accessibility

First and foremost is the issue of access to the market. This entails liquidity and free availability of physical volumes, as well as an active and open futures market for hedging and price risk management. A paper market also enables derivative volumes settled against the crude to grow in multiples of the size of the physical spot market.

To ensure accessibility, ADNOC must evolve its crude sales and operations to fit any new contract. The company's biggest obstacles to overcome are its retroactive OSP setting formula and destination restrictions (see Table 1). This is a crucial consideration if Murban is to develop any sort of forward paper market, as that will require a move away from the current retroactive OSP method. As a first step toward listing an exchange-based contract, ADNOC could make a relatively simple switch from retroactive to prospective OSP setting, the kind that Saudi Arabia, Kuwait, Iran, and Iraq currently employ (see Figure 16).

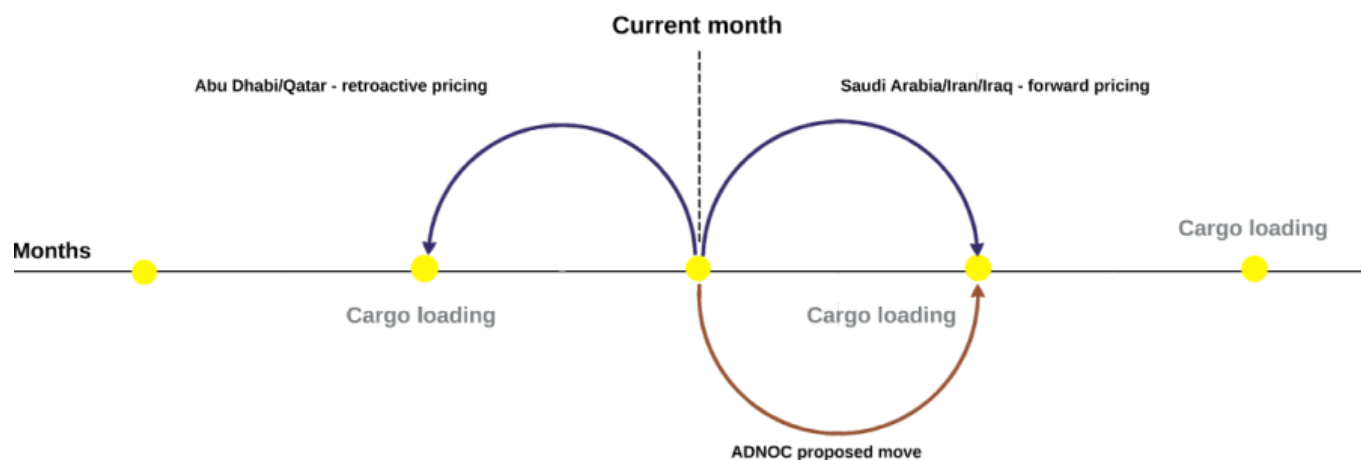
Table 1: Middle Eastern OSPs and characteristics

Producers	Pricing basis	Method	Issued
Saudi Aramco	Platts Dubai	Prospective	1 month before loading
	+ DME Oman		
KPC	Platts Dubai	Prospective	1 month before loading
	+ Platts Oman		
SOMO	Platts Dubai	Prospective	1 month before loading
	+ Platts Oman		
NIOC	Platts Dubai	Prospective	1 month before loading
	+ Platts Oman		
Oman	DME Oman	Prospective	2 months before loading
ADNOC	Outright value	Retrospective	1 month after loading
QP	Outright value	Retrospective	1 month after loading

Notes: KPC = Kuwait Petroleum Corporation; NIOC = National Iranian Oil Company; QP = Qatar Petroleum.
Source: S&P Global Platts.

³¹ The challenges outlined here are not exhaustive.

Figure 16: ADNOC pricing vs regional peers



Sources: Bloomberg, OIES.

The next likely step, following the launch of the contract,³² will be to adopt a price-setting method: like DME Oman, the contract would trade two months in advance, in line with both Dubai and Oman; daily settlements would be at the usual 'Singapore Window' time of 16:30; a monthly average of all the daily settlements would then be the OSP for Murban. The DME Oman contract has had several issues in the final days of each month of settlement and the new contract would have to be designed properly in order to avoid such problems.³³ ADNOC may need to ensure a large enough pool of physically deliverable crude to support liquidity. Given Murban's large production, liquidity could be supported by diverting oil from one month to another, from storage or even from the current domestically consumed barrels from Ruwais refineries (in favour of alternative grades). As the OSP is set on the exchange, the other equity holders are likely to inject a sizeable number of cargoes into the contract to avoid pricing risk.

Adding an alternative delivery procedure (ADP) would be another idea: designating ADNOC's other light sour crude grades, Das Blend and Umm Lulu, or even other light crudes, as alternative deliverables into the contract would help mitigate liquidity concerns.

Having a Murban derivative listed on an exchange such as ICE opens a new array of risk management features for crude traders globally. It has the potential to generate interest from counterparties that sell into Asia, including those that deal in close alternatives such as the Kazakhstan CPC Blend, or Russia's ESPO. It also provides the global market a bigger basket of Middle Eastern-centric derivatives as Asia's relevance to producers around the globe increases with growing light sour crude output.

Physical logistics

As regards physical logistics, ADNOC has two issues to address:

- First, whether it can continue its current exercise of tying in a portion of output via long-term contracts, and whether volumes can remain under destination restrictions. Currently the company has long-term contracts with Asian refiners and traders. The former (contracts with Asian refiners) is destination-restricted where a small fee can be paid to 'unrestrict' a cargo.

³² At the time of writing, there is no official confirmation from either ADNOC or ICE about the listing of a Murban contract on the exchange. However, well-informed sources at APPEC have mentioned an ICE-based physical delivery contract to be launched early next year, similar to the existing DME Oman contract.

³³ For a detailed discussion on problems and possible solutions, see Adi Imsirovic, 'What next for Asian benchmarks? – A footnote', OIES, November 2018.

- ADNOC delivers Murban at two locations: Jebel Dhanna and Fujairah. Lifters co-loading other ADNOC grades will prefer Jebel Dhanna, while others will prefer Fujairah, which is outside the Strait of Hormuz. It will have to work out a method for allocating deliverable volumes between the two in an anonymous futures environment. This may deter buyers who would prefer to continue to buy OTC if they have a loading port preference. Additionally, ADNOC will need a major overhaul of its scheduling operations – futures will trade two months forward and so barrels will need to be allocated to the seven exporters at least a few days before two months before loading. This is much earlier than ADNOC’s current allocation calendar, which is finalized one month prior to the scheduled month of loading.

OPEC commitments

The UAE is a key member of OPEC, and no OPEC producer has ever had a benchmark. How does the emirate balance its priorities for Murban against further OPEC production cuts, for example? So far OPEC producers have had the leeway to determine the proportion of their grades subject to the cuts in place since 2016. Looking ahead, ADNOC’s commitments to Murban liquidity will have to compete with UAE’s role in OPEC.

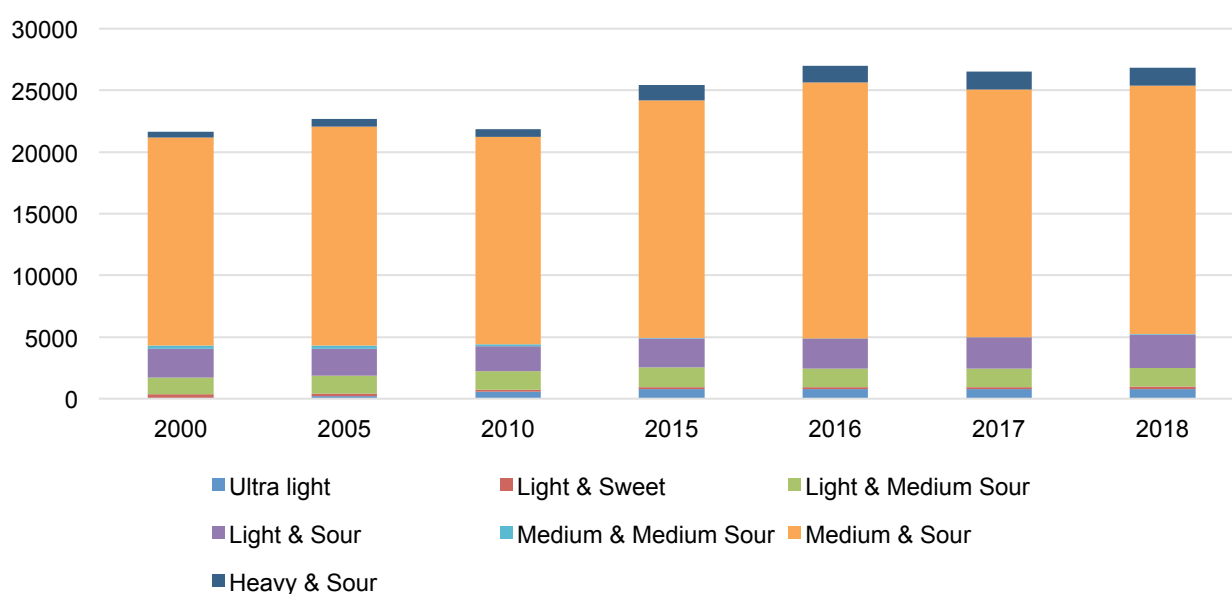
Destination restrictions

A move toward destination-free barrels delivered from an exchange implies a clear divergence from the Middle Eastern producers’ conventional control over the flow of their barrels. If ADNOC lifts destination restrictions – a given if they are to list a derivative contract – it implies that the market will allocate the barrels wherever it sees fit. However, destination restriction has historically been the Middle Eastern producer’s tool to set discriminatory pricing by region. If ADNOC opens up its pricing to the market at large, control over the flow of Murban somewhat loses its relevance. It may, however, generate resistance from traditional buyers, for example term contract holders in Japan, South Korea, India, or Southeast Asia, who may see themselves as losing out on guaranteed term volumes and having to compete with a much larger pool of anonymous traders on the exchange.

Crude production quality in Middle East

As a Light Sour, Murban is quite different from the rest of the heavy-medium sour Middle Eastern slate (see Figure 17), so it may have limited use to some of the key exporters from the region such as Saudi Arabia, Iraq, and Kuwait.

Figure 17: Middle Eastern crude production by quality, kb/d



Source: ENI.



Liquidity risks

The introduction of a Murban benchmark carries the risk of dividing up the little liquidity that exists in the Gulf. Currently there are two longstanding benchmarks in place: DME Oman and Platts Dubai. Can the region successfully generate additional liquidity for a third grade? We must also ask how OSP formulae might change with such a move.

Oman is an example of a grade that did not face challenges such as OPEC membership, or loading or destination restrictions. Even then, it has struggled with liquidity and volatility issues. However, a key difference between Murban and Oman is that the latter's demand is almost solely dictated by the sentiments of China's monthly spot requirements; these can vary greatly with the rest of Asia and pull the futures contract away from being representative of the wider Asian crude market.

The answer lies largely in the perception of the market. It could be viewed as a door to more granularity and flexibility in price risk management. Additionally, it could quell complaints from some corners about the influence large trading houses have over the incumbent benchmarks (i.e. Dubai and Oman). On the flipside, the Asian market could show a high degree of resistance to this new and very different method of price setting and risk management. In general, this is not a region that changes its pricing systems quickly. How this perception plays out depends significantly on the extent of ADNOC's engagement with its stakeholders, and its willingness to adapt to market requirements.

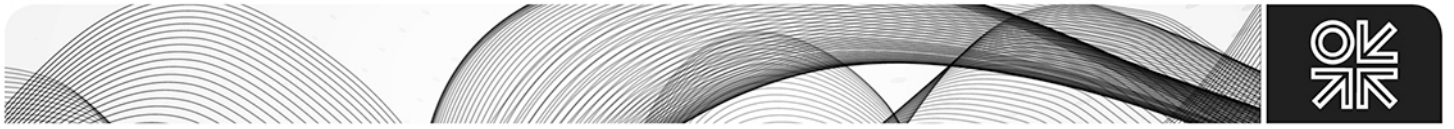
One likely outcome is that Murban and Dubai are used in relative to one another, which is the current practice in the market. Currently, traders buying and selling Murban use differentials of the grade over its OSP and over Dubai to value the grade. In fact, this is the case for all Middle East crude grades being traded on the spot market in Asia. If Murban is set up as a benchmark, the Murban–Dubai spread could become the new dedicated marker of intra-Asian sour crude dynamics, similar to how the Brent–Dubai spread currently encompasses Euro-Asian and sweet–sour fundamentals.

Given the above challenges, if ADNOC was determined to promote Murban as the new light sour benchmark for Middle East crude, it would have to make a series of changes, including to pricing, contract setting, and operations. One likely way forward is as follows:

- Lift destination restrictions on cargoes, and lay out a framework for an earlier nomination procedure.
- Work closely with ICE in designing the contract. Physical delivery contracts face important operational issues. DME took years to resolve certain operational inconsistencies. ICE has less experience with physical delivery (Permian WTI started deliveries in December 2018) and will have to work very closely with ADNOC on developing the right set of skills.
- Allow a derivative market to develop alongside physical trade flows.
- Switch OSP mechanisms prior to the exchange listing.
- Support liquidity in the listed contract, together with equity holders (ensure minimum volumes sold through the exchange).
- Consider an alternative delivery mechanism (ADP or deliverability of other light crudes into the basket).

6. Concluding thoughts

The road to establishing Murban as a viable benchmark is still long and many challenges lie ahead. Key changes need to occur to make the initiative a success and some of the factors are beyond ADNOC's control. The key regional oil exporters have shown huge reluctance to change their pricing systems and adopt new benchmarks in their pricing formulae, and the limited changes recently adopted by some of the regional producers have been in the making for years. As the experience of the DME Oman contract clearly shows, establishing Murban as a transparent pricing benchmark is achievable, but it may still fail to attract the degree of liquidity essential for effective risk management. In other words, the success of Murban as a benchmark will be measured against its ability to attract liquidity. This is especially true when liquidity is already being split among many competing crude



benchmarks. The desire to establish a Murban benchmark clearly shows that the pricing regimes in the Gulf and in Asia cannot be immune to the structural shift in trade flows and the rising power of Asia. Furthermore, if the Gulf producers want to avoid pricing power shifting to Asian consumers, they have no choice but to continue to innovate and offer attractive solutions to their key customers. Finally, an intriguing question is how the OPEC leader, Saudi Arabia, will react to these changes.