

How Best to Spur LNG in the Energy Transition?



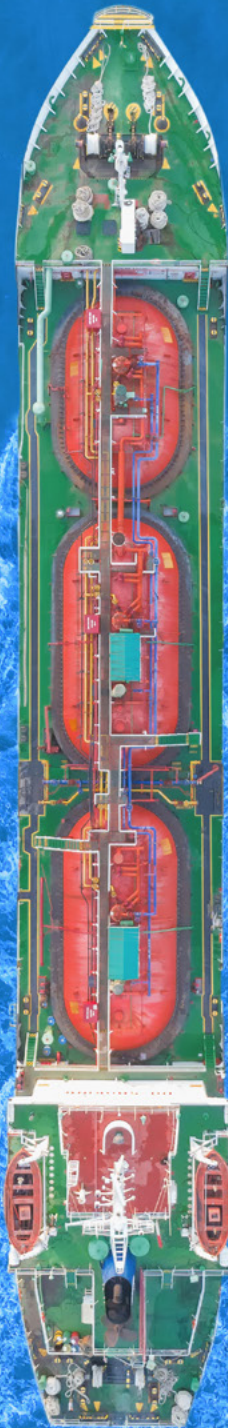
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Every energy market faces its critics – and LNG is no different as the global microscope on environmental credentials intensifies. Still the overarching narrative of this ‘greenest’ fossil fuel can see it remain a vital ally in the global push for decarbonisation in the Middle East and beyond by mid-century. However, sustained finance will be pivotal to making this a reality. So how to mitigate investors’ concerns while developing this market’s blooming potential? Improve flexibility and embrace diversity.

The shine that saw LNG markets heralded as a potential silver bullet of the energy transition – a green bridge from fossil fuels to renewables – has faded a little (see page 3: How clean is LNG?). Still, LNG is a welcomed fossil fuel in what will be an increasingly green world, unlike its cousin coal, and even oil. But LNG market norms will need to evolve to maximise the market’s usefulness and profitability – and fast.

What was always going to be a tricky year for the LNG market – excess supply depressing prices in the early 2020s has been on the cards since 2016 – has unexpectedly become far trickier. Oil-indexed LNG prices have been affected by oil price’s first ever dive into negative territory in April this year. While improved, oil prices are still relatively stagnant, hovering around \$40/bl. And unsurprisingly, the lockdowns and movement

restrictions triggered by the Covid-19 pandemic have fuelled this supply-demand mismatch. It is worth noting this dynamic has affected all energy markets, albeit with different severities.

The pandemic has also catapulted climate change front and centre as leaders and society alike become keen to avoid disruption on this scale ever again. While this focus on the environmental agenda is laudable, it has caught many in the industry off guard (see page 4: Stranded assets warning). Not even when the Paris Agreement – the world’s most substantial climate mitigation deal to date – was created in the French capital in 2015 was there such momentum. The changing sentiment means that the historical ‘bread and butter’ supply deals and project finances that typically stretched 20-years now collide with countries and companies’ net zero targets of 2040, 2050 and so on (see page 5: What’s next?).

5 focus areas?

Control of gas resources and reliability of supply have long been the competitive cornerstones for LNG exporters. It was well noted among competing international stakeholders that Qatar did not miss a single LNG shipment to Japan during the disruption of the Fukushima disaster in 2011, for example.¹ And while control of resources and reliability of supply remain vital characteristics in an export-import relationship, new market dynamics means five other factors also need to be at the top of the list going forward.²

- ✓ Capital efficiency
- ✓ Supply-chain optimisation
- ✓ Downstream market development
- ✓ Decarbonisation
- ✓ Digital and advanced analytics



¹ <https://bit.ly/3k7Gb6V>
² <https://mck.co/3217Jjh>

How clean is LNG?

LNG is not pushing back the wave of environmental cynicism that others in the hydrocarbon camp – notably coal and oil – are dealing with. But there are questions about whether it should be a ‘bridge’ to a lower carbon future and if so, how long should the world be willing to tread it?

Approximately 117 pounds of CO₂ are produced per million British thermal units (MMBtu) equivalent of natural gas. Comparatively, it is more than 200 pounds of CO₂ per MMBtu of coal and more than 160 pounds per MMBtu of distillate fuel oil, according to the Energy Information Administration (EIA).¹ When it comes to bunkering, LNG emits approximately 25% less CO₂ than conventional marine fuels in providing the same amount of propulsion power. While promising, concerns persist as LNG is mostly methane. This is a potent greenhouse gas (GHG), which traps 86 times more heat in the atmosphere than the same amount of CO₂ over a 20-year time period.²

The conversation about LNG’s green credentials will only intensify as more



countries and companies make the unprecedented step to commit to net zero targets. As of this year, China – to be the world’s biggest economy in 2024 – is aiming for carbon neutrality by 2060, while Japan and the European Union (EU) are aiming for 2050. On the corporate side, BP, Shell, Equinor and many others, are aiming for carbon neutrality by mid-century, while Sweden’s Lundin Petroleum has set a 2030 deadline. In the Middle East, major and primarily state-owned energy companies

are working to meet demanding sustainability targets, although they have yet to state net zero goals. For one, Saudi Arabia’s state oil giant, Aramco, said it will reduce the carbon intensity of its business as part of the Oil and Gas Climate Initiative (OGCI), which includes Shell, BP and ExxonMobil, while the UAE’s ADNOC said it wants to cut its GHG intensity by 25% by 2030.

¹ <https://bit.ly/2lkqfBk>
² <https://bit.ly/3p8JKgN>

More gamechangers are on the way and we do not know the impact they will have on LNG – from a price on carbon to seeing how nations’ net zero pledges impact day-to-day operations. Let us not forget the impact of geopolitics – an always unpredictable yet powerful influencer – and the real and still unknown financial toll of the Covid-19 pandemic.

UP, UP, UP

On the supply side, the Middle East is a big driver, in large part as it is home to Qatar, long the world’s biggest LNG exporter. And Doha is only ramping up its ambitions. The country is already working on plans to boost its existing 77mn tonnes a year of liquefaction capacity to 110mn tonnes a year by 2025. A second phase is due to expand capacity further to 126mn tonnes a year by 2027.¹

Plus, Qatar Petroleum issued a tender in April last year to build carriers for the LNG expansion, seeking to initially deliver 60 LNG carriers, with potential to exceed 100 over the next decade.² Financiers’ confidence in Qatar’s plans is justified. The state has spearheaded the region’s LNG journey since the 1980s, at a time when neighbouring nations’ economic scorecards were based on oil. Its reputational and operational leverage of low production costs, scale and being able to co-produce with liquefied petroleum gas



(LPG) underpins Doha's competitive edge. Others in the region are fast catching up, with projects that have been in construction for years now being realised, i.e. ready for operations, amid a major supply glut. Oman is pushing LNG development, which includes an LNG bunkering terminal at its Sohar Port. And Kuwait aims to open what will be the Middle East's largest import terminal for liquefied natural gas in March³ – good timing as the Middle East cannot yet meet its rising domestic gas and LNG demand from its population, one of the fastest growing worldwide.

Following the US election, it remains to be seen how dramatically, if at all, the country changes its tact with Iran – a nation with the potential to be a medium-sized supplier, if not a new LNG juggernaut. History books give a boost of confidence for the country's plans. For example, Tehran's financial acumen during one round of economic sanctions – subsidies were cut and inflation fell by over 30% from 2013 to

2016⁴ – suggest a savvy producer who can efficiently exploit LNG's growth when some of the current supply glut is soaked up in the next two to three years.

From a global perspective, if almost all regions worldwide contributed to the growth in natural gas production in the next five years – which of course impacts LNG supply – then half of the net increase in supply comes from North America and the Middle East, the International Energy Agency (IEA) forecasts. The Middle East may have a window of opportunity to broaden its lead over the US, which had been pegged by the IEA pre Covid-19 to become the world's biggest exporter in 2024. The energy behemoth's shale industry is particularly vulnerable in today's current crisis; upstream spending on shale tight oil and gas is expected to halve year-on-year in 2020.⁵ Details aside, the short to medium-term outlook of oversupply remains.

Stranded assets warning

Concerns over stranded assets are not new to commodity markets. Our ability to switch on a light spelled the end of the industrial whaling industry in the early 1900s, while the mass production of coal replaced many logging industries as wood-fired energy became less popular. This narrative is playing out again in the decarbonisation agenda.

Public opinion is becoming an increasingly powerful driver of energy-related policy decisions, especially decarbonisation. Illustrating the shift in sentiment, more than 1,200 institutions worldwide managing \$14.5trn in assets have committed to divest from fossil fuels, up from 181 managing \$50bn five years ago, according to international movement Fossil Free.¹ Add to this that the whispers of peak oil becoming a reality within a decade have now turned into confident forecasts.

Against this backdrop, the Financial Times' Lex estimates around \$900bn – or one-third of the current value of big oil and gas companies – could evaporate if governments more aggressively attempted to restrict the rise in temperatures to 1.5C above pre-industrial levels for the rest of this century. Even in what the industry might see as the more benign case of a 2C rise – which was the target countries agreed to meet in the Paris Agreement – energy producers would have to write off more than half of their fossil fuel reserves as stranded. If the 1.5C threshold were to be met then the pain would be greater, leaving more than 80% of hydrocarbon assets worthless.²



Energy majors are well aware of this threat, perhaps most starkly reflected in BP's announcement this year that it'll shrink its oil and gas flows by at least 1mn b/d of oil equivalent – or 40%, over the next decade.³ This risk need not stop LNG investments – indeed investments should be used to improve the market – but it must be reflected in asset stress reports so that investors and others in the chain have a transparent outlook.

INVESTORS' APPETITE?

Investors are clearly still keen to support LNG, which tends to be an expensive product to produce (albeit currently cheap to buy). For example, in the past year alone, the amount of LNG terminal capacity under construction worldwide has more than doubled, with total capital expenditure rising from \$82.8bn to \$196.1bn.⁴ Aforementioned market pressures mean the flow of funds will inevitably dip this year – whether its slightly or severely remains to be seen –

with many companies already forced to declare force majeure delays and reschedule final investment decisions (FIDs). As of late June this year, at least 11 major projects have reported significant new difficulties, typically citing combinations of pandemic disruption, low prices and organised opposition, detailed Global Energy Monitor.⁴

Then also add the broader financial pressure to the mix. The Gas Exporting Countries Forum (GECF) highlights how major budget cuts across the sector from international oil companies (IOCs), national oil companies (NOCs) and service companies are estimated at more than \$110bn as of June 15th this year. Plus, many IOCs have revised down their price assumptions for oil and gas prices up to 2025, impacting LNG price projections.⁵

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 2 <https://on.ft.com/2lmZeNf>
 3 <https://on.bp.com/2UbKcmG>
 4 <https://bit.ly/3lk8gtf>
 5 <https://bit.ly/3kne8R4>

All forecasts for financiers must include a big caveat, as the full impact and recovery from the Covid-19 pandemic remains unclear. Only once the dust has cleared will firmer forecasts about finances and sentiment be possible.

WANING DEMAND (FOR NOW)

Hopes that demand would tick upwards in the early 2020s to use some of the anticipated supply glut have fallen flat. The impact of Covid-19 via lockdowns, restricted movements, reduced industrial capacity and general economic strain have dimmed demand. This year's gas demand could fall by 4-7% – by far the largest shock in more than 50 years, McKinsey detailed.⁶ This drop is echoed by other forecasts. For example, energy and ship brokerage Poten & Partners expects LNG demand this year to fall below the 2019 levels by 6.7mn metric tonnes. It added that even this view may not be bearish enough, with a potential loss of as much as 13.8mn metric tonnes due to risks of secondary waves of the pandemic and economic recessions.⁷ The rollout of vaccinations and lifting of lockdowns would see demand tick higher, as will a rapidly growing population in the Middle East and beyond (the United Nations expects today's global population of 7.7bn to hit 9.8bn by 2050 – a 26% surge). But for now, forecasters appear unanimous: do not expect significant demand recovery in the short-term.

WHAT'S NEXT?

This supply-demand mismatch has its strains, but it can also unlock many opportunities, for both existing and new players in the LNG market. If managed properly, today's strain could ensure the market evolves to have a greener, more robust and longer future.

For one, the power dynamic at the negotiating table has switched, with LNG sellers now on a backfoot as buyers take the reins. Buyers who have long operated in a market dominated by long-term supply deals now increasingly want more flexibility, notably spot and short-term deals. There is also demand from buyers to be able to sell excess LNG from their base market to other terminals, both within and beyond their borders – a move previously frowned upon by exporters. Now buyers, alongside increasing their commercial flexibility to sustain their order book, must also bolster their knowledge in order to pinpoint new opportunities in this rapidly shifting market.

The anti-coal rhetoric, which has rocketed this year, could also play to LNG's benefit, thus making it a far more attractive market for investors. Building liquefaction facilities is technical, complicated, time-consuming and expensive work. This used to deter potential investors. But the global push for decarbonisation does not see coal as a mainstay in the energy basket. Combined with lower LNG prices, this is making gas and LNG increasingly attractive to a broader spectrum of markets, notably coal-hungry and price-sensitive Asia. For one, watch China's developments as the world's largest coal consumer commit to carbon neutrality by 2060; unsurprisingly the energy juggernaut is expanding its LNG market. In a notable move, China's imports of LNG will likely grow 10% to new highs this year.⁸ While it is the only demand bright spot this year, the LNG market



SNAPSHOT: LNG'S JOURNEY?

1600s

The seeds of what we now call LNG were sown by chemist Richard Doyle roughly four centuries ago.¹

1873

German engineer Carl von Linde built the first compression refrigeration machine.²

1959

The Methane Pioneer delivered the first ever transoceanic cargo of LNG, travelling from the US Gulf Coast to the UK.³

1964

The world's first purpose-built LNG carrier entered service 56 years ago, in the mid-1960s.³

2014

The global LNG market celebrates 50 years of history with about 80,000 transfers – without significant accidents.²

2020

In April, the Global LNG fleet consisted of 594 carriers with a combined 89mn cbm – nearly double the 47.1mn cbm in 2010.⁴

2022

But now there is an imbalance putting pressure on the market. The global LNG fleet is set to remain in excess until 2022 (at least).⁵

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 2 <https://bit.ly/357oXCy>
 3 <https://bit.ly/3k8g9An>
 4 <https://bit.ly/2lk0dOP>
 5 <https://bit.ly/3laNoVd>



Will the 21st century write the epitaph of LNG? Possibly, but that is still eight decades away. The world's first shipment of LNG was only six decades ago; consider the positive impact the market has had on the global energy landscape, energy security and profitability for stakeholders. In that context, LNG still has plenty of life to live.

could do worse than having the world's second biggest economy as an eager customer.

The lower prices in the LNG market could also open the market to a new breed of financiers previously locked out, including smaller nation states, small and medium-sized enterprises (SMEs) and entrepreneurs. The latter two are especially relevant in the Middle East, where countries' National Visions focus on broadening the spectrum of financial players in order to strengthen the region's role as a world-class economic hub. Plus, LNG prices can accelerate plans within integrated oil and gas players – some of whom are major NOCs in the Middle East – to transform blueprints into a reality sooner than planned. Optimistically, this could start chipping away at some of the supply glut earlier than anticipated.

Another opportunity for financiers to support the industry is via new technologies, the commercialisation of existing ones, general infrastructure and energy efficiency improvements. For example, the cost of LNG projects rose from less than \$500/tonne of capacity at the turn of the century to more than \$2,000/tonne in 2012. In

2017, costs came down to an average of around \$900/tonne but could fall further. Improved design and execution of greenfield LNG projects can realise savings of 30–40%, bringing capital costs back into a range of \$500–\$600/tonne – much more attractive for much-needed investors.⁹ Other areas that could support LNG's relevance long-term by supporting the environmental agenda is examining how to offset the CO₂ emissions of LNG with nature-based sinks, how to establish the CO₂ footprint per tonne of LNG and broadening the LNG bunkering market (see page 7: Bunkering: Area of potential).

Will the 21st century write the epitaph of LNG? Perhaps, but that is still eight decades away. The world's first shipment of LNG was only six decades ago; consider the positive impact the market has had on the global energy landscape, energy security and profitability for stakeholders since then. In that context, there are still plenty of financial gains to be made in a market which has only really just gained its footing. The Arabic proverb may ring true: "What is coming is better than what has gone."

1 <https://bit.ly/3eN0p4R>
 2 <https://bit.ly/3lfoFx>
 3 <https://bloom.bg/3nich21>
 4 <https://bit.ly/35fx4Np>
 5 <https://bit.ly/35fZyXc>
 6 <https://mck.co/36lZdBD>
 7 <https://bit.ly/32x20Kv>
 8 <https://reut.rs/32wzpBS>
 9 <https://mck.co/2lfmVru>

Greener bunkering: New era of potential

THE IMO 2020 EFFECT?

It was one of the biggest overhauls in global shipping since the early 1900s: the International Maritime Organisation's (IMO) new sulphur limit of 0.5%, down from 3.5%, came into force on the 1st January this year. Known more commonly as IMO 2020, it has spurred appetite for LNG bunkering, which has been a long-discussed option that needed policy support to gain momentum. In May this year, ResearchandMarkets said the global market for LNG bunkering could grow at a compound annual growth rate (CAGR) of 15% during 2020–2025¹ – a soaring trajectory for any market, even if from a low base. While the initial cost of infrastructure to establish LNG bunkering can be high, the financial benefits thereafter balance out the discomfort. Many companies are increasingly appreciating this, with this consolidated market slowly growing (pre Covid-19). Major companies include Royal Dutch Shell, Nauticor GmbH & Co. KG, ENN Energy, Korea Gas Corporation and Harvey Gulf International Marine LLC.²

RISING DEMAND

LNG is imported and exported at more than 150 locations worldwide and demand for gas as a shipping fuel could reach 35mn tonnes of LNG a year by 2035, Shell estimated. Meanwhile, Pavilion Energy expects LNG bunkering demand to grow to 9mn metric tonnes by 2025 and just under 30mn metric tonnes by 2030, with the LNG bunkering fleet growing to more than 8,000 by 2030 from an existing fleet of 556.³

MIDDLE EAST'S PROSPECTS?

On the port side, the UAE's Port of Fujairah, the world's second largest bunkering hub, is currently the region's only LNG bunkering location – a position it is keen to capitalise on. Just 150km to the south, lies Oman's Sohar Port. The new and ongoing development has joined LNG industry body SEA \LNG to promote the port's investment in LNG bunkering facilities. Despite the close proximity to Fujairah, there will be enough business to go around as the eastern coastline of the Arabian Peninsula lies on the Indian Ocean – an ever-busy body of water, especially as Asia's consumption expands.



STICKING POINT?

LNG is not the cleanest marine fuel, so its role as a primary option remains unclear. While LNG is a marked improvement on the environmental credentials of high sulphur fuel oil (HSFO), there are still cleaner options that must be explored, such as biofuels. Investments can focus on technologies that reduce total life-cycle GHG emissions, including energy-saving technologies, wind-assisted propulsion, zero emission fuels, batteries and fuel cells, according to the International Council on Clean Transportation.⁴ In the near term however, LNG is a fuel that the market understands: a beacon of certainty in a sea of questions over the future of marine fuels. Still, stakeholders must be careful they do not become complacent as policies for greener marine fuels will inevitably become more stringent.

VALUE OF OFFSETTING?

The estimated costs for pricing carbon neutral LNG can vary, detailed S&P Global Platts.⁵ One estimate by Australia's Origin Energy showed that for a standard LNG cargo with average CO₂ emissions of 304,000 tonnes, the "Green Premium" can indicatively be assessed at 80 cents–\$1.70/MMBtu assuming an average offset cost of \$10–\$20/tonne of CO₂. The S&P Global Platts JKM for October was assessed at \$4.613/MMBtu on September 9th, which means that the premium for a carbon neutral LNG cargo could be between 17%–37% of the price of an LNG cargo in the current market. At \$4.613/MMBtu, a full LNG cargo would cost around \$15.7mn, while the same cargo could cost around \$18.4–\$21.5mn if its carbon footprint was fully offset.⁵ Is the market, especially in the current climate, willing to make this commitment to spur long-term LNG growth?

1 <https://bwnews.pr/3n95A20>
 2 <https://bwnews.pr/2GEZMOa>
 3 <https://bit.ly/2Ubl9tL>
 4 <https://bit.ly/3pc9uZJ>
 5 <https://bit.ly/3knqYP7>

