

LNG North America

LNG Unlimited Data Includes:

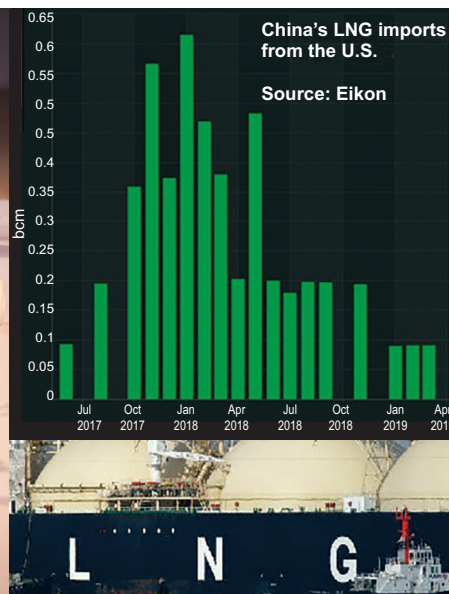
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September 2019

Tellurian likely to delay FID on US LNG project amid Chinese tariffs

Tit-for-tat trade tariffs keep escalating the Sino-U.S. trade war and threaten to delay the second wave of American LNG export projects. Tellurian and other developers are expected to delay final investment decisions (FIDs) on US LNG export projects in the absence of firm offtake contracts from key Chinese buyers.

Retaliating to Washington's tariff increase on \$200 billion in Chinese goods, Beijing in June raised its tariff on U.S. LNG imports from 10% to 25%. This levy, together with a climate of mistrust, has made Chinese state-owned buyers shy away from signing offtake agreements with U.S. LNG projects – much to the detriment of smaller developers.



Bank of America observed that smaller LNG developers face fierce, often break-neck competition from cash-rich oil companies like Exxon Mobile and Shell which do not need to sign long-term offtake agreements before building multibillion-

dollar LNG export terminals. But also majors like Tellurian are likely to push back FID on its Driftwood LNG project from the second half of 2019 to mid-2020.

Tellurian told investors it will retain more of the terminal's liq-

uefaction capacity to its own than planned earlier, probably in the absence of firm offtakers. If it will build all five trains with combined capacity of 27.6 million tons per annum, it will retain 13.6 mtpa from the facility to market on its

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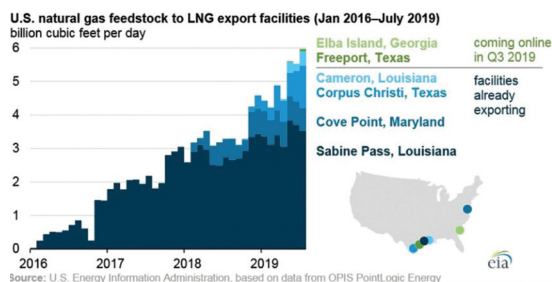
Feedgas supply for U.S. LNG export surges

Natural gas deliveries to U.S. LNG export plants set a monthly record in July, although gas use for power generation spiked to 44.5 billion cubic feet (Bcf) on July 19. Healthy shale gas output drove down spot gas prices at the Chicago Citigate – the regional price benchmark for Midwestern states to levels lower than those at Henry Hub.

Chicago Citigate prices averaged 19¢/MMBtu lower than Henry Hub prices which hovered around \$2.33/MMBtu from July 16 through July 21, according to Natural Gas Intelligence. High gas inventories and abundant new supply have pushed down summer gas prices to near 20 year lows. Forecasts from the U.S. Energy Information Administration (EIA) for June, July and August see Henry Hub spot prices average \$2.37/MMBtu – some 19% lower than last summer.

Tanker loadings surge
U.S. LNG exports set new records in June and July 2019 at 4.8 Bcf/d

and 5.2 Bcf/d, respectively, based on tanker loadings data from Bloomberg L.P. Natural gas feedstock deliveries to LNG export terminals averaged 5.5 Bcf/d in June and 6.0 Bcf/d in July, implying



that about 15% of the natural gas feedstock sent to LNG facilities was used as fuel in the liquefaction process.

With the start-up of Cameron LNG Train-1 in Louisiana in May

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own. Partners and offtakers are required to make an upfront \$500 million equity investment in Tel-lurian's holding company that controls Driftwood LNG.

Total recently committed to invest equity into Driftwood LNG and agreed buy 1.5 mtpa from the project, but there is still work to be done. "As soon as we finish documents we will take FID," Tel-lurian spokeswoman Joi Lecznar said, remaining rather vague about the timing of financial close, although project startup is still scheduled for 2023.

Trade war ends direct LNG trade

Goldman Sachs analysts warned the tariff could "effectively end direct LNG trade" between American exporters and Chinese importers, or led to a fast drop in purchases of spot LNG cargoes. In

fact, China last imported a U.S. cargo in March 2019 and nothing else since, according to Refinitiv trade flows. Instead, China received more cargoes from Australia, Russia, Cameroon, Egypt, Indonesia, Nigeria, Oman, and Malaysia.

Seeking to circumvent tariffs, some cunning traders have approached their suppliers, asking for shipments from non-tariff nations instead. If this proves to be impossible, hard-nosed buyers may opt to pay a break-up fee to get out of such contracts, rather than having to pay the higher tariffs.

Political tensions have made U.S. shipments to China fall off a cliff. Between February 2016, when LNG exports began from the Lower 48 states, and the start of the trade war in July 2018, China used to be the third largest buyer of American super-chilled natural

gas. So far this year, China is no longer in the top ten.

Beijing latest LNG tariff increase from 10% to 25% further reduces the number of U.S. shipments, although analysts say "the absolute value of the tariff is partially offset by falling spot prices in Asia – from over \$10/MMBtu when initially introduced to closer to \$5.50/MMBtu today."

No Chinese funding for US projects

Stable, long-term trading relations are unthinkable between Chinese buyers and US sellers these days. The last long term contract signed by a Chinese offtaker and US seller was in February 2018 – before the Trade War began, when PetroChina signed a 25 year sales and purchase agreement (SPA) with Cheniere Energy.

Since then, Chinese buyers

have announced both SPAs and heads of agreements (HOAs) from the rest of the world, including projects in Mozambique and Canada, and portfolio sellers like Qatargas and Petronas. Wood Mackenzie warns "an ongoing trade war will continue to create hesitancy for Chinese buyers to sign up for new long term volumes."

Looking forward, strong LNG supply growth is seen to continue outpacing demand through 2020. Supply will grow by 38 mtpa in 2019 and another 30 mtpa in 2020, while demand in high-priced Asia Pacific markets will only grow by 12 mtpa and 16 mtpa in 2019 and 2020, respectively. According to analysts, "this market length creates flexibility to redistribute and optimize trade flows, especially as the US is one of the more distant sources of LNG for China." ■

Fracking-focused U.S. companies produce gas glut, not profits

The U.S. fracking sector "disappoints yet again" is the bleak verdict of IEEFA's second quarter earnings review of oil and gas companies. Only 11 of the 29 scrutinized companies achieved positive free cash flows, and together they generated \$26 million free cash flows – "too little" to dent their \$100 billion in long-term debt.

Shale fracking over the years became a victim of its own success, with abundant oil and gas production keeping prices too low to generate robust profits, considering natural gas prices at Henry Hub have fallen below \$2.50/MMBtu this summer.

"A few companies can now eke out modest positive cash flows," analysts acknowledged. "Yet the sector as a whole has never produced enough cash to pay down

debt or reward investors with generous dividends or share buybacks."

EOG Resources cash in most

Much of the positive cash flow was attributed to one company in particular – EOG Resources – that posted \$1.1 billion in free cash flow for the quarter, a turnaround of \$1.5 billion quarter-over-quarter. But even the positive returns from EOG Resources failed to stop

the downward slide of the company's stock price.

Other companies with positive free cash flows included Marathon Oil (\$150 million), Devon Energy (\$116m), and Cabot Oil and Gas (\$101m). On the downside, marquee names in the fracking sector posted negative free cash flows, including Anadarko

Free Cash Flow at 29 Fracking Companies



Petroleum (-\$526m), Southwestern Energy (-\$227m), Chesapeake Energy (-\$178m), and Diamondback Energy (-\$154m). ■

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and Corpus Christi LNG Train-2 in Texas in June, total U.S. LNG export stands at 5.4 Bcf/d across four facilities and nine liquefaction trains.

Two more projects – Elba Island LNG in Georgia and Freeport LNG in Texas – aim to place their first trains in service in the next two months. Production at Elba Island has been delayed amid technical problems, while Train-1 at Freeport LNG is on track to come online in September 2019 and Train-2 and 3

are scheduled for the second and third quarters of 2020.

Supply growth "moderate" by 2020

Abundant domestic gas supply left plenty of room to ramp up U.S. LNG export plants. Some 7%, or 6.0 Bcf/d, of total U.S. dry natural gas production was destined for export in July, data from OPIS PointLogic Energy shows. However supply growth is likely to "moderate" starting from next year.

An updated assessment of U.S. drilling activity and average well productivity shows that output is way higher than previously assumed. Analysts at the EIA expect gas supply growth will start to moderate later this year and in 2020, so gas prices are likely to go up.

Hence, the Henry Hub natural gas spot price is forecast to average \$2.50/MMBtu in the second half of 2019, and \$2.77/MMBtu in 2020. ■

LNG North America

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Gas-to-oil ratios in the Permian at odds with pipeline capacity

In the Permian, the gas-to-oil ratio keeps rising at mature shale plays. The mismatch between surging gas production and constrained takeaway pipelines has pushed down gas prices into negative territory, forcing well shut-ins from producers like Apache and Chevron.

Permian gas production is poised to grow by up to 4 Bcf/d in the period between May and December 2020, Wood Mackenzie estimates. These additional volumes will heighten price pressure at the Waha gas hub.

Pipeline constraints caused extreme negative Permian daily prices that first appeared in late March and early April. Negative natural gas prices were seen as “extremely inconvenient for oil producers” at a time of low seasonal demand and pipeline outages.

Shut-ins amid negative gas prices

Though Mexican gas demand keeps rising, there are limited possibilities to export excess supply from the Permian southbound due to a lack of pipeline infrastructure. “Extreme negative daily pricing trickled down to producers’ bot-

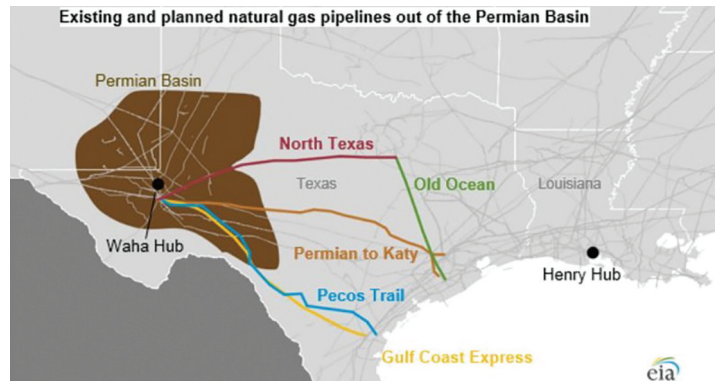
tom lines,” analysts commented.

Distressed production from Apache and Chevron has led to temporary economic shut-ins. These shut-ins are expected to last until October 2019, when the Gulf Coast Express pipeline is planned to begin operations.

Start up of the Gulf Coast Express, as well as the Permian Highway Project and Whistler pipelines, will alleviate tight export constraints in coming years. But analysts reckon “more takeaway capacity will be needed thereafter by 2025 to avoid hitting a wall once again.”

Recalibrating gas-to-oil ratios

The gas-to-oil ratio compares the volumetric flow of gas and oil from a well at standard temperature and pressure conditions. As wells mature, these ratios in-



crease particularly when reservoir's pressure drops lower than the so-called bubble point.

Falling oil production can challenge the economics of a liquids-rich reservoir. Many producers are also not prepared to deal with the rising volumes of gas production which ideally should be captured and transported to demand centers. However, in the absence of pipeline infrastructure, much of this associated gas is being flared.

In the Permian's Wolfcamp A&B

bench drilling, oil cuts have already started to decline. Average Midland and Delaware basin oil cuts have fallen nearly 10% over the last five years, with more dramatic cuts seen in sub-plays like the Northern Reeves in the Delaware and the Midland basin's Southern Fairway. According to Wood Mackenzie figures, average Wolfcamp A&B oil cuts have dropped below 65%, driven by aging tight-oil wells hitting their bubble points.

U.S. shale gas gale to push down prices, accelerate coal-to-gas switch

Shale gas is now dominating the overall gas production in the United States and is forecast to reach an average 91.3 Bcf/d in 2019, up 8.0 Bcf/d from the previous year. The gas glut is expected to push down Henry Hub spot prices to \$2.50/MMBtu in the second half of this year and further increase gas-burn in the power sector.

In 2020, the shale gas boom is set to continue with average U.S. output forecast to rise by another 1.4 Bcf per day. This oversupply will be partly absorbed by LNG and pipeline exports, so Henry Hub spot prices are likely to rebound to \$2.77/MMBtu in 2020.

Henry Hub spot prices dropped from an average of \$2.64/MMBtu in May to an average of \$2.40/MMBtu in June, with some daily prices in June falling below \$2.30/MMBtu. “The recent price

declines reflect relatively mild weather in June that led to lower-than-expected natural gas-fired electricity generation and allowed natural gas inventory injections to outpace the five-year average rate,” reads the latest short-term energy outlook the Energy Information Administration (EIA).

Emissions fall as gas-burn rises

Ample supply of comparatively cheap domestic gas is accelerating

the fuel switch in the power sector. The EIA expects total utility-scale electricity generation from gas-fired power plants will rise from 35% in

2018 to 38% in 2019 and then decline slightly in 2020. Gas-burn of the electric power sector is increasing by 1.1 Bcf/d (3.8%) from 2018 levels as a result of favorable natural gas prices and coal-to-gas switching. Last year, gas-burn surged 14.7% amid substantial additions of new gas-fired capacity.

Coal, in contrast, keeps losing market share down from 24% in 2019, to 23% in 2020, compared with over 27% in 2018. Domestic coal production in the U.S. is seen falling to 684 million short tons (MMst), down 72 MMst or 9% year-on-year. Less coal-burn in the power sector, combined with lower exports, is forecast to make U.S. coal production decline by another 45 MMst, or 7%, in 2020.

Energy-related carbon dioxide (CO₂) emissions have fallen as

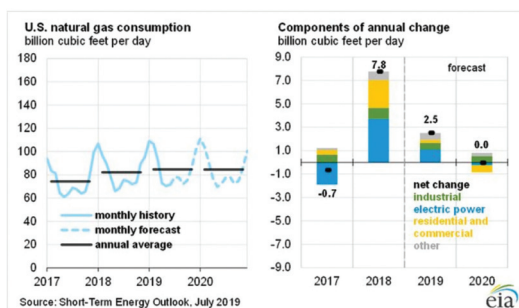
cleaner-burning natural gas gets preferred over thermal coal. After rising by 2.7% last year, power sector emissions are seen to decline by 2.2% in 2019 and by 0.7% in 2020.

Wind, solar gain market share

Non-hydropower renewables - notably wind and solar - together provided 10% of U.S. total utility-scale generation in 2018 and the EIA expects they will provide 11% in 2019 and 13% in 2020.

Meanwhile, hydropower averages a 7% share of total U.S. generation in the forecast for 2019 and 2020, similar to 2018.

Nuclear is retreating, down from 20% market share this year to 19% in 2020, reflecting the retirement of reactors at five nuclear plants.



The Atlas Copco logo is located in the top right corner, featuring the company name in a white serif font within a blue rectangular box. The background of the entire advertisement is a photograph of a male worker wearing a white hard hat with the Atlas Copco logo, safety glasses, and a high-visibility yellow vest over a dark blue long-sleeved shirt. He is working on a large, complex industrial machine, likely a compressor or turbine, with a large circular opening visible in the background. A blue diagonal graphic overlay with technical drawings and dimensions is positioned in the lower-left quadrant, partially covering the worker and the machinery.

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Calcasieu Pass fully financed

Venture Global LNG has confirmed the closing of the project financing for its Calcasieu Pass LNG facility and associated TransCameron pipeline in Cameron Parish, Louisiana. The proceeds of the debt and equity financing fully fund the balance of the construction and commissioning of Calcasieu Pass, the company said. Full site construction has been underway since February 2019, and the project is expected to reach its commercial operations date (COD) in 2022.

Stonepeak Infrastructure Partners provided a \$1.3 billion equity investment for the project. The lender group for the company's \$5.8 billion construction financing includes the world's leading Asian, European and North American project finance banks.

The lenders who provided funding at closing were Banco Santander, Bank of America, Goldman Sachs Bank USA, Industrial & Commercial Bank of China, ING Capital, JPMorgan Chase Bank, Mizuho Bank, Morgan Stanley Senior Funding, Natixis, Nomura Securities International, Royal Bank of Canada, Sumitomo Mitsui Banking Corp and The Bank of Nova Scotia.

Venture Global LNG Co-CEOs Mike Sabel and Bob Pender jointly stated: "Our goal has always been to lower the cost of electricity by delivering clean, low-cost LNG to the world. The closing of our financing is the culmination of years of hard work, and we want to sincerely thank our Venture Global



Calcasieu Pass LNG export project in Cameron Parish, Louisiana

team, our construction partners, our foundation customers, our lenders and advisors, Cameron Parish and our local partners in Louisiana."

Calcasieu Pass has received all necessary permits, including FERC authorisation and non-FTA export authorisation from the US Department of Energy. The project has 20-year LNG sale and purchase agreements with Shell, BP, Edison, Galp, Repsol and PGNiG, the company claimed.

Venture Global LNG is also developing the 20 million tonnes per annum Plaquemines LNG project and the 20 million tonnes per annum Delta LNG project, both located in Plaquemines Parish, Louisiana.

Morgan Stanley served as financial advisor to Venture Global for the transaction, while Latham & Watkins served as counsel to the company and Skadden, Arps, Slate, Meagher & Flom served as counsel to the lenders. ■

Commonwealth LNG files for permit

Developers of Commonwealth LNG have filed a formal application with U.S. regulators for a permit to build an 8.4 million tonnes per year export terminal and affiliated feedgas pipeline interconnect in Cameron Parish, Louisiana.

The private company had been in the pre-filing process with the US Federal Energy Regulatory Commission (FERC) since 2017. Its formal application with FERC requests permit certificate approval

by January, 2021, so commercial exports can start by the first quarter of 2024.

Houston-based Commonwealth, a subsidiary of an investment vehicle owned by Paul Varello, is

proposing a six-train facility, with each unit capable of producing 1.4 mtpa of LNG. Total capacity could be increased to 9.5 million tonnes under optimal conditions, the

permit application said.

The project will also include six LNG storage tanks and a three mile long, 30 inch diameter natural gas pipeline that will connect the facility with existing pipeline systems operated by Kinetica Partners and EnLink Bridgeline Holdings.

Commonwealth expects to build significant portions of the trains and storage tanks offsite using modular construction, which is becoming more common among second wave US developers to shorten construction time, cut costs and find suitable offtakers.

In June, Commonwealth said it

Freeport LNG joins list of U.S. gas exporters

Freeport LNG has become the sixth major US liquefaction facility to start operations. First LNG production for the project's Train 1 occurred on 12th August, 2019, according to Japanese utility major JERA.

Osaka Gas and JERA are involved in the project through a company, FLNG Liquefaction (FLIQ1). Work will continue towards the start up of commercial operation in the autumn of this year, the companies said.

FLIQ1 made its final investment decision (FID) for Train 1 in October, 2014. The project operator is Freeport LNG Development.

After achieving commercial start up, Osaka Gas and JERA will lift half of Train 1's total contracted capacity amounting to about 4.64 mill tonnes per annum, on liquefaction tolling agreements with FLIQ1.

In addition, both companies will each secure LNG without destination restrictions, diversify their supply sources and price indices, and enhance the stability and flexibility of their LNG procurement, JERA said. Ship tracking data showed several LNGCs in the area possibly waiting to load at the facility. ■



Freeport LNG during construction

had signed a heads of agreement with commodity trader Gunvor towards a definitive 15-year sale and purchase agreement for 1.5 million tonnes per year of LNG off-take from the proposed terminal. Commonwealth said at the time that it expected to take a final investment decision (FID) on the project in 2020. ■



Render of Commonwealth LNG

At the Core of LNG

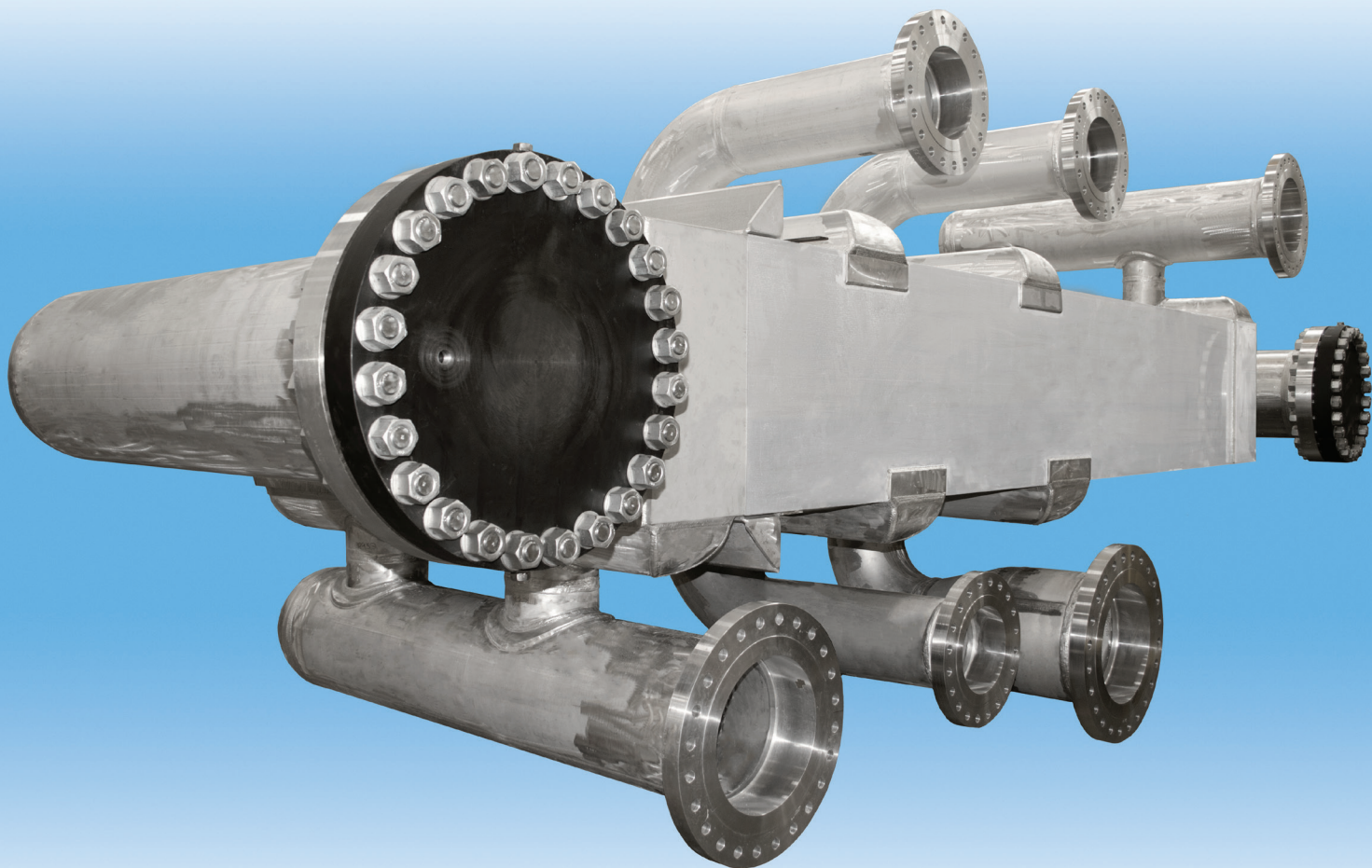


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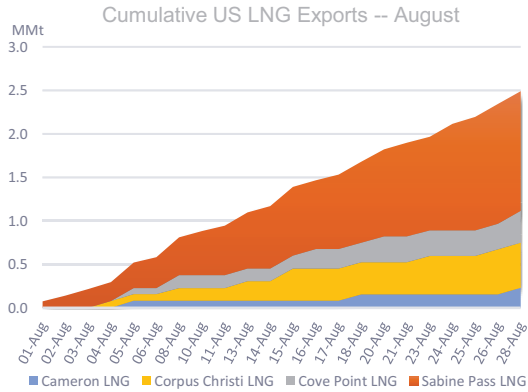


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US LNG in August

LNG Unlimited Data

- August exports to date at 2.49mmt
- Total shipments down by 0.99mmt
- Average capacity utilisation at 71%



Source: **LNG** Unlimited

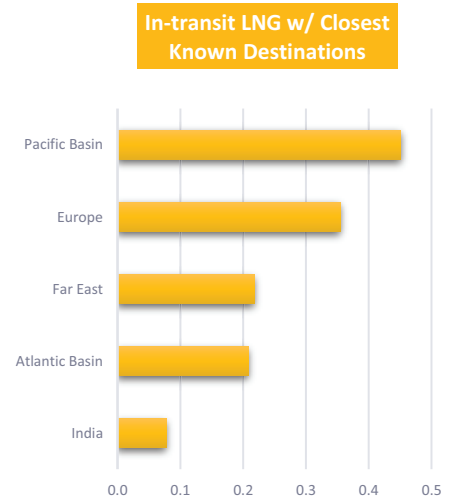
mainly down to capacity leaseholders' vessel scheduling. Whilst we did report on ongoing maintenance issues at two of Sabine's LNG storage tanks, implicating 40% of storage capacity, these issues did not hamper the terminal's performance in July.

The vast majority of US LNG cargoes are still at sea. Although the ongoing trade dispute between the US and China has curbed LNG trade between the two countries, the Pacific region remains the prime destination of North American LNG. As indicated by

As of 28 August, US LNG is likely going to see a significant drop of 0.99mmt in month-on-month this month, with Sabine Pass LNG accounting for c. 79% of that retreat. Accordingly, capacity utilisation is also set to drop, from 97% to 71%, on average. Whilst we expect those performance figures to have improved by 31 August, we do not currently see US LNG export continuity from July levels. Although, for example, July's mid-month slump was quickly overcome by a spurt of exports towards the end of the month, current market visibility

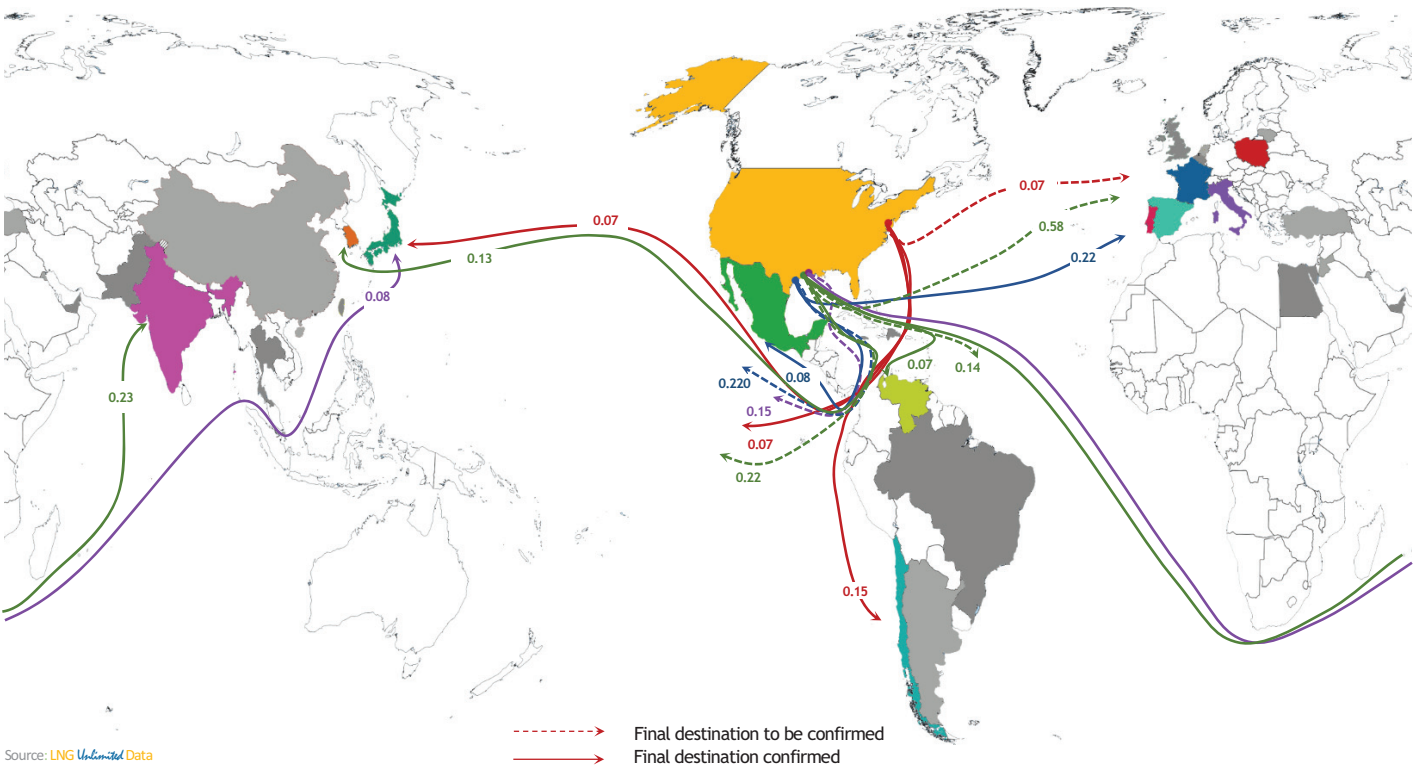
suggests only around 5 additional LNG cargoes will leave the United States before 1 September out of the 12 currently scheduled over the coming 10 days (not including those earmarked for Freeport LNG).

Even when assuming the two cargoes we see taking place on 1 September manage to leave port on 31 August, US LNG would still close the month down approximately 0.40mmt compared to July. It is yet unclear what the underlying reasons for that drop are, though we suggest it is



Source: **LNG Unlimited Data**

the map below (greyed out countries for past destinations of US LNG that have not seen deliveries in August), some portfolio players even choose the longest LNG route to Asia in existence - around the Cape of Good Hope - to save on Panama Canal and Suez Canal transit fees where scheduling allows. In all 1.44mmt of 2.49mmt shipped by US LNG terminals in August so far are headed for or have already arrived in the Pacific.



US LNG Still in Transit

LNG Unlimited Data

Given the portfolio-based business model of US LNG in general, whereby portfolio players lease capacity under take or pay contracts, North American LNG cargoes are undertaking some of the longest voyages in the market. Notably, 29 of the 34 cargoes shipped so far in August are still in transit, with the majority still lacking confirmed destinations. As such, all of Cameron's August cargoes are still at sea en route to the Pacific region, with current visibility suggesting 0.08mmt aboard the *SK Resolute* will arrive at Naoetsu in Japan in mid-

September. Meanwhile, the *Flex Ranger* is currently en route to the Sines terminal in Portugal, due to arrive by Friday morning. The cargo is likely traded by Naturgy (formerly Gas Natural Fenosa) as part of its T2 contingent of 1.5mtpa at Corpus Christi.

The only Cove Point cargo reaching its destination so far has been aboard the BW-operated *Pan Asia*, which delivered 0.08mmt to Chile's Endesa via the Quintero terminal on 27 August. Sovcomflot's *SCF Mitre* is also headed for Chile, with an expected

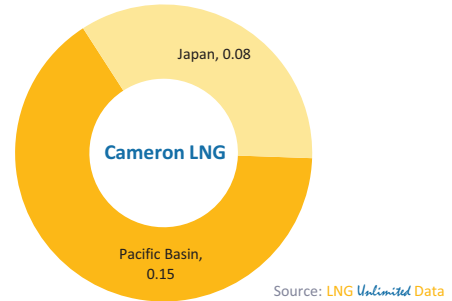
arrival in the first week of September. For Sabine Pass, meanwhile, our LNGUnlimited market tracker indicates that three cargoes amounting to 0.23mmt are headed for India, two of which - the *Maran Gas Hydra* and the *Maran Gas Agamemnon* - are scheduled to arrive at Dahej a week apart around mid-September. Provided neither are diverted, Dahej (operated by Petronet) would then constitute the single largest recipient for Sabine's August production.

Export Terminal	Vessel	Capacity (mmt)	Departure	Destination	ETA
Cameron LNG	Diamond Gas Sakura	0.07	18-Aug	Pacific Basin	15-Sep
	SK Resolute	0.08	05-Aug	Joetsu LNG	14-Sep
	SK Audace	0.08	26-Aug	Pacific Basin	17-Sep
Corpus Christi LNG	British Sponsor	0.08	26-Aug	Pacific Basin	25-Sep
	BW Lilac	0.08	04-Aug	Far East	02-Sep
	Flex Ranger	0.08	15-Aug	Sines	29-Aug
	Maran Gas Delphi	0.07	08-Aug	Europe	05-Sep
	Maran Gas Mystras	0.07	23-Aug	Far East	10-Sep
	Marvel Eagle	0.07	15-Aug	Atlantic Basin	29-Aug
Cove Point LNG	Energy Glory	0.07	20-Aug	Pacific Basin	10-Sep
	SCF Mitre	0.08	16-Aug	Quintero	05-Sep
	WilPride	0.07	05-Aug	Himeji	02-Sep
	Cool Runner	0.07	28-Aug	Europe	20-Sep
Sabine Pass LNG	Castillo De Villalba	0.06	11-Aug	Atlantic Basin	05-Sep
	Clean Ocean	0.07	24-Aug	Pacific Basin	19-Sep
	Flex Rainbow	0.08	25-Aug	Montoir-de-Bretagne	06-Sep
	Fuji LNG	0.07	02-Aug	Europe	02-Sep
	Hoegh Giant	0.07	18-Aug	Swinoujscie LNG	01-Sep
	K. Jasmine	0.06	17-Aug	Incheon	13-Sep
	K. Mugungwha	0.07	20-Aug	Pyeongtaek	17-Sep
	Maran Gas Agamemnon	0.08	21-Aug	Dahej	20-Sep
	Maran Gas Amphipolis	0.08	03-Aug	India	29-Aug
	Maran Gas Hector	0.08	24-Aug	Atlantic Basin	08-Sep
	Maran Gas Hydra	0.08	08-Aug	Dahej	12-Sep
	Maran Gas Posidonia	0.07	14-Aug	Far East	11-Sep
	Maria Energy	0.08	05-Aug	Pacific Basin	15-Sep
	Methane Becki Anne	0.08	13-Aug	Europe	02-Sep
	Oak Spirit	0.08	15-Aug	Huelva	29-Aug
	Yari LNG	0.07	26-Aug	Europe	14-Sep
Total		2.13			

Monthly US LNG Exports as of 28 August

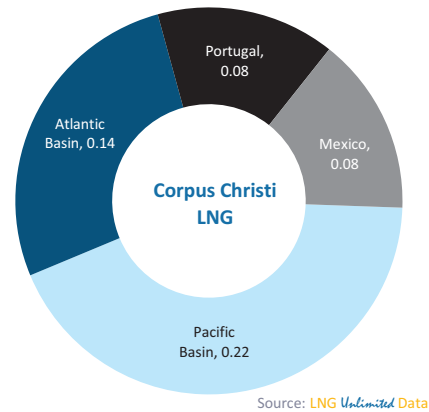
Cameron LNG

Cameron LNG is likely to be the only US LNG terminal improving its month-on-month performance in August, albeit from a low base. The terminal has shipped 0.23mmt so far this month, thus improving its monthly output by roughly one cargo (0.08mmt) and increasing capacity utilisation by 20pp to 55%. We are expecting the *Flex Endeavour* to lift one more cargo by Friday, though this may well be delayed into Saturday or even Sunday as the vessel has not yet berthed at Cameron this morning as originally expected and is still waiting outside US territorial waters.



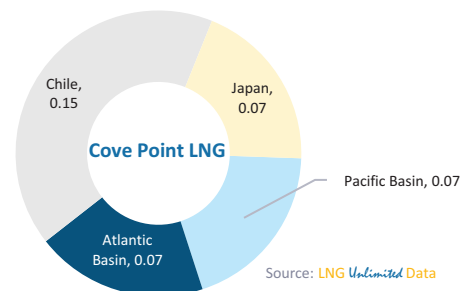
Corpus Christi LNG

Production at Corpus Christi LNG is likely to see a 0.22mmt drop in exports month-on-month as the terminal has so far shipped only 0.52mmt in August with market visibility not indicating additional cargo liftings before the end of the month. To date, 7 vessels have left the terminal in August, implying capacity utilisation of 69%, down 30pp month-on-month. Apart from a BP cargo delivered aboard the *Kinisis* to Mexico's Manzanillo terminal on Monday, all remaining 6 Corpus Christi cargoes are still at sea.



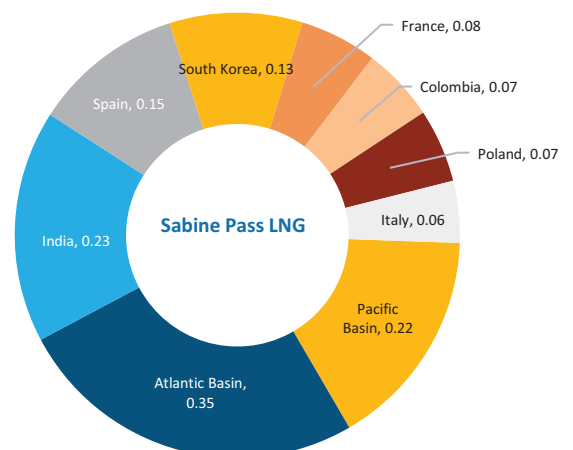
Cove Point LNG

Cove Point LNG had shipped 0.37mmt at the time of writing in August, which represents a fall in output by roughly one cargo (0.08mmt) and pegs capacity utilisation at 77%. Compared to this time last July, the terminal had shipped 0.44mmt. Although we are expecting the *Energy Liberty* to lift an additional cargo by Saturday, which would increase its monthly output to July levels, the schedule seems tight so that the cargo may well be lifted only in September.



Sabine Pass LNG

Sabine Pass LNG's exports stood at 1.37mmt on 28 August, thus representing significantly lower output by 0.78mmt month-on-month and by 0.11mmt year-on-year. Concurrently, export capacity utilisation fell drastically by 41pp to 73%. Sabine Pass' largest single recipient so far has been the Bahía de Bizkaia terminal close to Bilbao in Spain, which took delivery of 0.07mmt via the *Marib Spirit* on 12 August. We are currently expecting at least three further Sabine cargoes to be lifted aboard the *Gaslog Salem*, the *Hyundai Princepia* and the *Ribera Del Duero Knutsen*, which would add 0.22mmt to the terminal's export balance by Saturday this week. Even so, Sabine Pass would still trail behind its July export performance.



US LNG Exports Year-on-Year

To Country	2018						2019							Grand Total
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug (E)	
South Korea	0.38	0.52	0.64	0.37	0.63	0.37	0.30	0.38	0.18	0.30	0.43	0.69	0.13	5.32
Japan	0.22	0.36	0.07	0.52	0.29	0.37	0.22	0.15	0.36	0.15	0.31	0.45	0.15	3.63
Mexico	0.42	0.22	0.15	0.07	0.22	0.31	0.14	0.15	0.22	0.44	0.36	0.52	0.08	3.31
Spain	0.03	-	0.08	0.08	-	0.07	0.16	0.22	0.23	0.33	0.29	0.08	0.15	1.71
Chile	-	0.08	-	0.08	0.07	-	0.06	0.22	0.23	0.14	0.41	0.21	0.15	1.65
India	-	0.04	0.15	-	0.15	0.15	0.15	0.16	0.14	0.32	0.07	0.07	0.23	1.64
France	-	-	0.14	0.22	0.15	-	0.08	0.45	0.32	0.15	-	-	0.08	1.60
Italy	-	0.14	0.07	-	0.13	0.22	0.07	0.15	-	0.14	0.08	0.30	0.06	1.35
United Kingdom	-	0.08	0.15	0.44	0.30	0.22	0.08	0.08	-	-	-	-	-	1.34
Argentina	0.29	-	-	-	-	-	-	-	0.09	0.23	0.23	0.33	-	1.18
Netherlands	-	0.06	0.06	0.06	-	-	0.06	0.22	0.29	0.23	0.07	0.07	-	1.12
Portugal	0.07	0.08	-	0.08	0.07	0.23	0.08	-	0.07	-	0.15	0.15	0.08	1.06
Brazil	0.17	0.07	-	-	-	-	0.08	0.08	0.08	0.05	0.28	0.14	-	0.95
Jordan	0.08	-	0.08	0.15	-	-	0.08	-	0.08	0.15	0.15	0.08	-	0.85
Pacific Basin	-	-	-	-	-	-	0.08	-	-	-	-	-	0.67	0.75
Turkey	-	-	0.05	-	0.21	0.21	0.14	-	0.07	-	-	-	-	0.68
Singapore	-	-	-	-	0.08	-	0.15	0.14	0.03	0.07	0.07	0.08	-	0.63
China	0.08	-	0.23	0.07	0.07	0.07	0.07	-	-	-	-	-	-	0.60
Poland	-	-	-	0.08	-	0.21	-	0.07	0.07	-	-	0.08	0.07	0.58
Atlantic Basin	-	-	-	-	-	-	-	-	-	-	-	-	0.56	0.56
Taiwan	-	0.04	0.10	-	0.07	-	-	-	0.13	0.07	-	-	-	0.41
UAE	-	0.08	-	-	-	-	-	-	0.15	-	0.07	0.08	-	0.38
Greece	-	-	0.02	0.06	0.08	-	0.07	-	-	0.08	-	-	-	0.31
Panama	-	-	-	-	0.07	-	0.07	0.07	-	-	0.07	-	-	0.27
Pakistan	-	-	-	-	-	-	0.08	0.08	-	-	-	0.08	-	0.23
Colombia	0.03	-	-	-	-	0.06	-	0.06	-	-	-	-	0.07	0.22
Kuwait	0.07	-	-	-	-	-	-	-	-	0.08	-	0.07	-	0.22
Dominican Republic	0.08	-	-	-	-	-	0.06	-	-	-	0.06	-	-	0.20
Jamaica	-	-	-	-	-	-	-	0.06	-	0.04	-	0.01	-	0.11
Thailand	-	-	-	-	-	-	-	-	-	0.08	-	-	-	0.08
Belgium	-	-	-	-	-	-	-	0.07	-	-	-	-	-	0.07
Grand Total	1.92	1.76	1.98	2.28	2.59	2.49	2.28	2.80	2.77	3.04	3.11	3.49	2.49	33.01

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Russia reviews its pipeline-based exports model, turns to LNG instead

With Europe's gas demand forecast to surge nearly 30% to 400 Bcm by 2035, Russia is eager to grow its market share. Eager to top rival suppliers, Gazprom is seen reviewing its traditional, pipeline-based export model and turn to LNG instead, avoiding quarrels over new interconnectors like with Nord Stream 2.

The second leg of Nord Stream, a 55 Bcm/y pipeline between Russia and Germany through the Baltic Sea, has been met by fierce opposition from Eastern European states and the U.S.

Unlike piped gas, Russian LNG is less likely to be met with such objections, given its flexibility to respond quickly to price and market signals. Analysts see this as "crucial" amid the decarbonisation and diversification efforts in Europe.

"The expansion of Russia's export capacity via LNG will be competitive on a cost basis against new pipes and competing global LNG projects," said Kateryna Filippenko, global gas supply analyst at Wood Mackenzie.

Aspiring to become Top 3 LNG exporter

The Putin administration has big plans for Russia's LNG industry – it aims to produce about 120 million to 140 million tonnes per annum of LNG by 2035, becoming one of the top three LNG exporters in the world with up to 20% market share. At present Russia's market share is only 8%, but growing. Indeed, Russian LNG volumes into

Europe for the first half of 2019 total 8 million tonnes, making it the second largest supplier after Qatar.

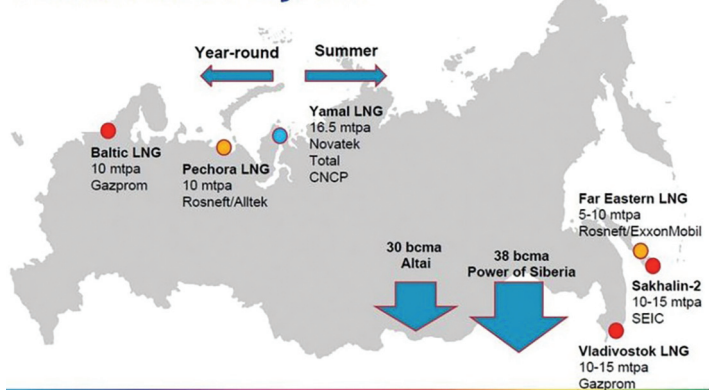
"Assuming that Russia maintains 60 Bcm of Ukraine transit capacity and develops new LNG projects, the country's export capacity available to Europe will grow by around 80 Bcm between 2019 and 2035 – almost matching the increase in Europe's import dependency," Filippenko said.

But she cautioned that opting for additional LNG rather than new pipeline projects will mean less direct tax revenue for the government. On the positive side, LNG exports would broaden Russia's reach into new markets – notably in Asia – while "derisking against European decarbonisation and diversification efforts."

European buyers embrace LNG

Europe's LNG imports over the first five months of 2019 are up 50% year-on-year already, and net LNG imports into Europe will be forecast to grow to 71 bcm in 2019, up from 32 bcm in the previous year. Still, pipeline gas supplies cover the lion's share of

Russian LNG Projects



Europe's demand, with over 300 Bcm originating from Russia and another 50 Bcm from North Africa and Central Asia.

Going forward, an anticipated record number of global LNG FIDs this year will result in a second wave of US LNG in the mid-2020, competing with Russian piped gas for market space.

New interconnectors unlikely

Gazprom tries to also boost pipeline gas supplies to its traditional European buyers, as it intends to maintain a market share above 35% – or a third of the EU's overall gas imports – through to 2035.

But observers caution it is unlikely that any new pipeline will be built beyond Nord Stream 2 and TurkStream. New gas interconnectors would need "unified support" from regulators and policy makers which is highly unlikely following the quarrels over Nord Stream 2.

"Ukraine transit will also help Russia increase piped supply post-2030," Ms Filippenko said. In her view, infrastructure availability is vital to meet European demand and Ukraine transit would allow Russia flexible supply into Europe in during seasonal demand peaks, maintenance periods and ramp up of new pipeline infrastructure. ■

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Brazil: Prumo starts building CCGT for LNG-to-Power project at Acu Port

Brazilian infrastructure company Prumo Logística is gearing up to start construction of its second gas power plant at the Port of Acu in Rio de Janeiro state before the end of 2019. The combined-cycle power unit will be part of the 'GNA 1' integrated LNG-to-Power project (1,300 MW), co-developed by Prumo and Siemens.

Prumo CEO Jose Magela Bernardes said the company is preparing to bid for a third EPC contract to build a CCGT in a government-run auction. Siemens is likely to work with Prumo also on the turnkey construction.

Siemens co-develops, partly funds the project

A substantial equity investment secured Siemens a one-third stake in the project company Gás Natural Açú (GNA), together with Prumo Logística and BP. Construction works on the first project phase already started in 2018, including a LNG import terminal with a regasification capacity of up to 21 million cubic meters per day (cbm/d). The power plant is slated to start operation at the beginning of 2021.

Looking ahead, there is "sub-

stantial scope for expansion," Siemens told *LNG Journal*, as developers already won licenses to implement a second CCGT unit, 'GNA 2', which will bring the overall capacity to 3 GW.

"Planning for yet another project phase – comprising further power units – is also at an early stage," a Siemens executive said, indicating that GNA holds an environmental license for up to 6.4 GW.

IFC, BNDES and KfW help finance GNA-1

The International Finance Corporation (IFC), a multilateral development agency and part of the World Bank Group, has said it provided a 15-year loan over \$228 million to fund the GNA-1 LNG-to-Power project in Porto do Açú. Project developers also received BRL1.76 billion (\$457m) in financ-



ing from the development banks of Brazil and Germany, BNDES and KfW Ipeex-Bank.

The BNDES-KfW part of the funding covers 39% of the total GNA1 project costs of R\$4.5 billion, the two banks stated. The financing deal was structured in a way that BNDES will provide the credit while KfW will be responsible for guaranteeing the operation, supported by the German

export credit agency Hermes. The deal structure is said to serve as a "blueprint for future infrastructure financing."

GNA's integrated LNG-to-Power Gen ventures are part of the Açú Gas Hub, designed to provide a logistics solution for the reception, processing, consumption and transportation of natural gas from Campos and Santos Basins, as well as import and storage of LNG. ■

Jamaica "on track" to cover nearly half of its electricity from LNG

Jamaica's Prime Minister Andrew Holness has confirmed the country is on track to generate half of its electricity from imported natural gas and renewables. The recent commissioning of New Fortress Energy's floating storage and regasification unit (FSRU) at Old Harbour helped boost the share of clean fuels to 44% of Jamaica's energy mix.

Signaling the speed of Jamaica's energy transition, New Fortress Energy (NFE) chairman Wes Eden said: "Two years ago virtually 100% of the energy in Jamaica was generated by oil, and two years from now virtually a hundred per cent of it will be natural gas or renewables."

"Energy costs [of LNG] are 30% lower and the environment is much cleaner, so with this I think

Jamaica is a model not only for the Caribbean but throughout the world. It's remarkable what has been accomplished here," Eden said, praising the cooperation with Jamaica's Office of Utilities Regulation.

Aspiring to become regional LNG Hub

The newly commissioned FSRU at Old Harbor not only secures gas

supply for Jamaica Public Service's soon-to-be-completed 190 MW Old Harbour power plant and the 150 MW Jamalco cogeneration plant, it will also help

Jamaica become a regional LNG hub in the Caribbean.

By 2020, over 600 MW of Jamaica's installed generating capacity will be powered by natural gas and renewables, exceeding the current 580 MW daily average. To help meet this goal, NFE has pledged to invest close to \$1 billion into new gas and power project, such as the \$265 million LNG-fuelled combined heat and power plant (CHP) at Jamalco's Halse Hall headquarters in Clarendon.

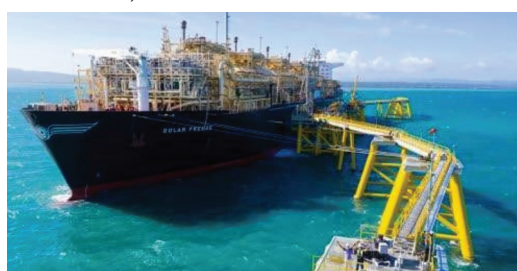
US LNG gets shipped from Miami to Jamaica

As a fully integrated energy provider, NFE built its first liquefaction plant in Florida, in 2015. The firm's affiliate American LNG has filed for approval to export up

to 3.02 Bcf/year of natural gas from its small Hialeah facility near Miami.

After receiving approval to export natural gas from the US to non-FTA countries, the company entered a long-term partnership with Jamaica's power company, JPS, for the conversion of two power plants Bogue (120-MW) and Old Harbour (190-MW). Both plants will be running on regasified LNG, supplied by NFE.

Jamaica Public Service Company (JPS), an integrated utility, is sole distributor of electricity on the island, catering for a peak demand of just under 660 MW. JPS is owned by Marubeni, Korea East West Power, the Government of Jamaica, and a small group of minority shareholders. ■



New Fortress Energy's 'Golar Freeze' FSRU offshore Old Harbor, Jamaica

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