

Gas and LNG Price Volatility To Increase in 2021

Buyer Beware

Executive Summary

Methane gas (what used to be known as 'natural gas') is an inherently volatile commodity.

Recent spot price volatility around the globe has led to tenders being cancelled. Prices are being offered at uneconomic rates, recently affecting customers in both Pakistan and Bangladesh.

Spot prices have increased 18-fold from lows seen just six months ago. A spot cargo out of Western Australia purchased by a Japanese company recently changed hands for a reported US\$37/one million British Thermal Units (MMBtu).

While contract prices have been relatively stable in the recent past, this stability is likely to give way to a renewed period of volatility as drilling activity has been low, gas industry investment in production and development has stalled, and oil and gas companies continue to experience financial instability and poor financial health around the world.

IEEFA expects the lower investment and reduced drilling activity will lead to price spikes and volatility at a higher level than experienced in the last three years. Gas customers globally can expect an unpredictable time ahead with substantially higher prices being a distinct possibility.

Emerging markets such as Vietnam, Pakistan and Bangladesh, amongst others, that are looking at Liquefied Natural Gas (LNG) to provide a source of power, will be faced with more volatile and also higher prices. This will inhibit each country's ability to fully utilise their existing LNG powered electricity generation plants.

**Emerging markets
will be faced with
more volatile
and higher prices.**

Vietnam, Pakistan and Bangladesh have over US\$50 billion of proposed gas-fired power projects at risk of cancellation from unaffordable LNG prices. The extreme volatility of spot prices combined with the increasing volatility of contract prices will see many projects become unbankable.

Onshore Gas Production Will Fall Substantially Going Forward

There was a collapse in drilling activity for shale oil and gas in the U.S. during 2020. The number of operating drill rigs fell 46% in the last 12 months. Internationally, operating drill rigs are down 40% over the same period.

According to the Australian Financial Review, this situation is being echoed for onshore gas in Australia: “Origin’s Australia Pacific LNG venture with ConocoPhillips and Sinopec has only drilled 23 wells this financial year compared with 95 at the same time last year, according to analysis by adviser Energy Edge, which raised concerns about the impact on future production levels.”¹ That’s a 76% fall in onshore drilling activity in the last 12 months for one of the three major LNG consortium on the east coast of Australia.

Figure 1: Operating Drill Rig Activity Has Fallen During 2020

Area	Last Count	Count	Change from Prior Count	Date of Prior Count	Change from Last Year	Date of Last Year's Count
U.S.	8 Jan 2021	360	+9	30 Dec 2020	-421	10 Jan 2020
Canada	8 Jan 2021	117	+58	30 Dec 2020	-86	10 Jan 2020
International	Dec 2020	665	-4	Nov 2020	-439	Dec 2019

Source: Baker Hughes Rig Count.

The global gas industry has experienced lower levels of drilling since the COVID-19 pandemic began, and over much of 2020. Shale and coal seam gas wells have fast decline rates so there is an imperative to keep drilling for new wells if production is to be maintained. Less drilling will lead to lower production in 12 - 18 months.

IEEFA notes that a global collapse in the operating drill rig count will lead to substantially lower onshore gas production starting in 2021.

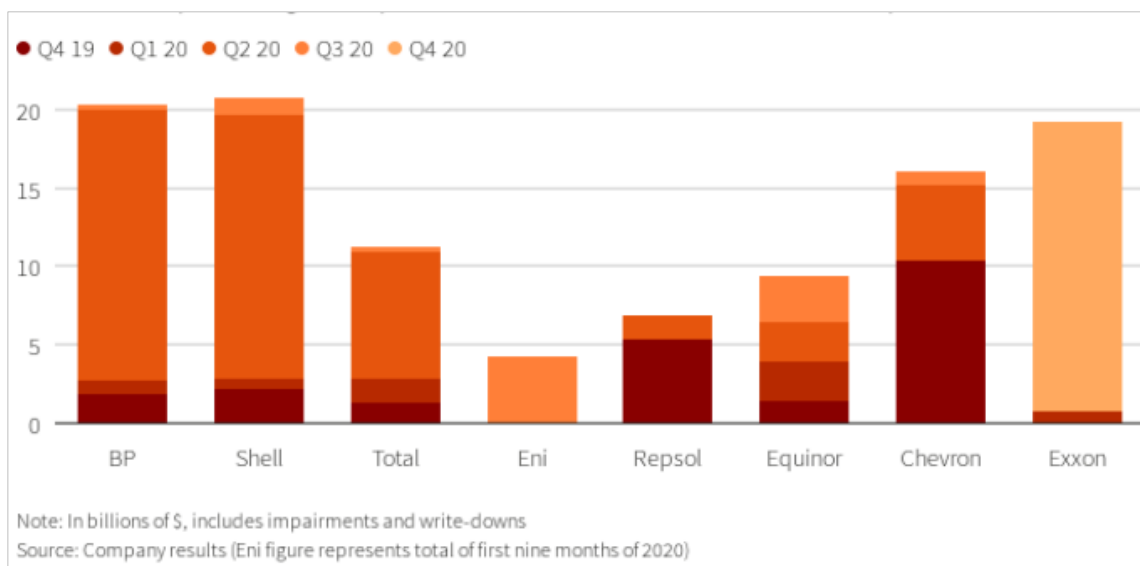
Forty-Three Bankruptcies and Ongoing Financial Instability in the U.S.

There were 43 oil and gas bankruptcies in North America to November 2020, restructuring US\$53 billion in debt, while total oil and gas bankruptcy debt since

¹ Australian Financial Review. [Origin Slashes Queensland Drilling as soft gas market bites](#). 30 October 2020.

2015 is now at US\$176 billion.² Both IEEFA³ and more recently Deloitte⁴ have noted that the U.S. shale gas industry has been unprofitable at a cash flow level for the last 10 years.

Figure 2: The World's Top Oil and Gas Companies Have Written off US\$80 Billion in Recent Quarters



Source: Reuters.

The financial instability of the U.S. onshore gas industry could lead to further bankruptcies and production losses. This is likely to have global implications as the U.S. is the third largest exporter globally.⁵

The write-offs in the U.S oil and gas industry have been extremely large. ExxonMobil for example is expected to write down its gas assets by US\$17 - 20 billion with its forthcoming fourth quarter results. According to Reuters⁶, the oil majors have written off US\$80 billion in recent quarters.

Financial instability in U.S. onshore gas will have global implications.

The extremely large write downs combined with poor profitability have crimped the oil and gas companies' ability to reinvest and keep production levels growing. This

² Haynes and Boone LLP. *Oil Patch Bankruptcy Monitor*. November 30, 2020.

³ Clarke Williams-Derry, Kathy Hipple and Tom Sanzillo. *Shale producers Spilled \$2.1bn in Red Ink Last Year*. IEEFA. March 2020.

⁴ Bloomberg. *Third of US Shale Near Technical Insolvency, Deloitte Says*. 22 June 2020.

⁵ OCE. *Resources and Energy Quarterly*. September 2020. Page 66.

⁶ Reuters. *Oil Majors wipe \$80bn off books as epidemic, energy transition bite*. 2 December 2020.

will increase price volatility as supply disruptions occur.

Production Shutdowns Have Contributed to Price Volatility

Chevron's Gorgon gas project off the north west of Western Australia suffered a six-month shut down to its second production train with repairs completed in November 2020.⁷ The large 15.6 million tonnes per annum (mtpa) project⁸ suffered from faulty welds on its second LNG train. The unplanned A\$545m production loss caused disruption to global LNG markets. Fortunately for LNG purchasers, the outage occurred at a time of weak demand. The other two trains are yet to be inspected and so further outages at this globally significant plant may be forthcoming.

Chevron was not the only company to experience outages in 2020. Malaysia's Petronas experienced production outages following a pipeline explosion in January 2020 in its Sabah-Sarawak Gas Pipeline that carries gas from the Keabangan offshore gas field in Sabah to Bintulu.⁹

Gas production is inherently a dangerous process and safety concerns can often either stop or substantially reduce production.

Implications of Price Volatility for Emerging Markets

Asian Spot LNG Prices Volatile in 2021, Rising More Than Eighteen-Fold from 2020 Lows

Asian spot prices have very recently spiked, rising more than 18-fold¹⁰ on prices of just six months ago. A cargo out of Western Australia sold to a Japanese customer for a reported US\$37/MMBtu. Stronger than expected seasonal demand on the back of a cold snap in Asia, and supply interruptions in Malaysia and at Chevron's large Gorgon gas project in the north west of Western Australia, conspired to spike prices. U.S. LNG shut ins on Hurricane activity have also dampened supply.

The secondary effects of extremely expensive gas cannot be underestimated. Electricity prices have spiked to Y100 (\$1.24) per kilowatt-hour in Japan, according to Argus.¹¹ The extreme volatility in spot gas and LNG pricing is a precursor to higher and more volatile prices in the future.

Both Bangladesh and Pakistan have had to cancel tenders for spot (short term) deliveries of LNG due to the extremely high prices offered at the end of 2020. An official from Petrobangla, Bangladesh's government-owned national oil company,

⁷ Peter Milne. [Boiling Cold, Chevron to restart Gorgon LNG train after \\$500m production loss](#). 1 November 2020.

⁸ OCE. [Resources and Energy Quarterly](#). September 2020. Page 65.

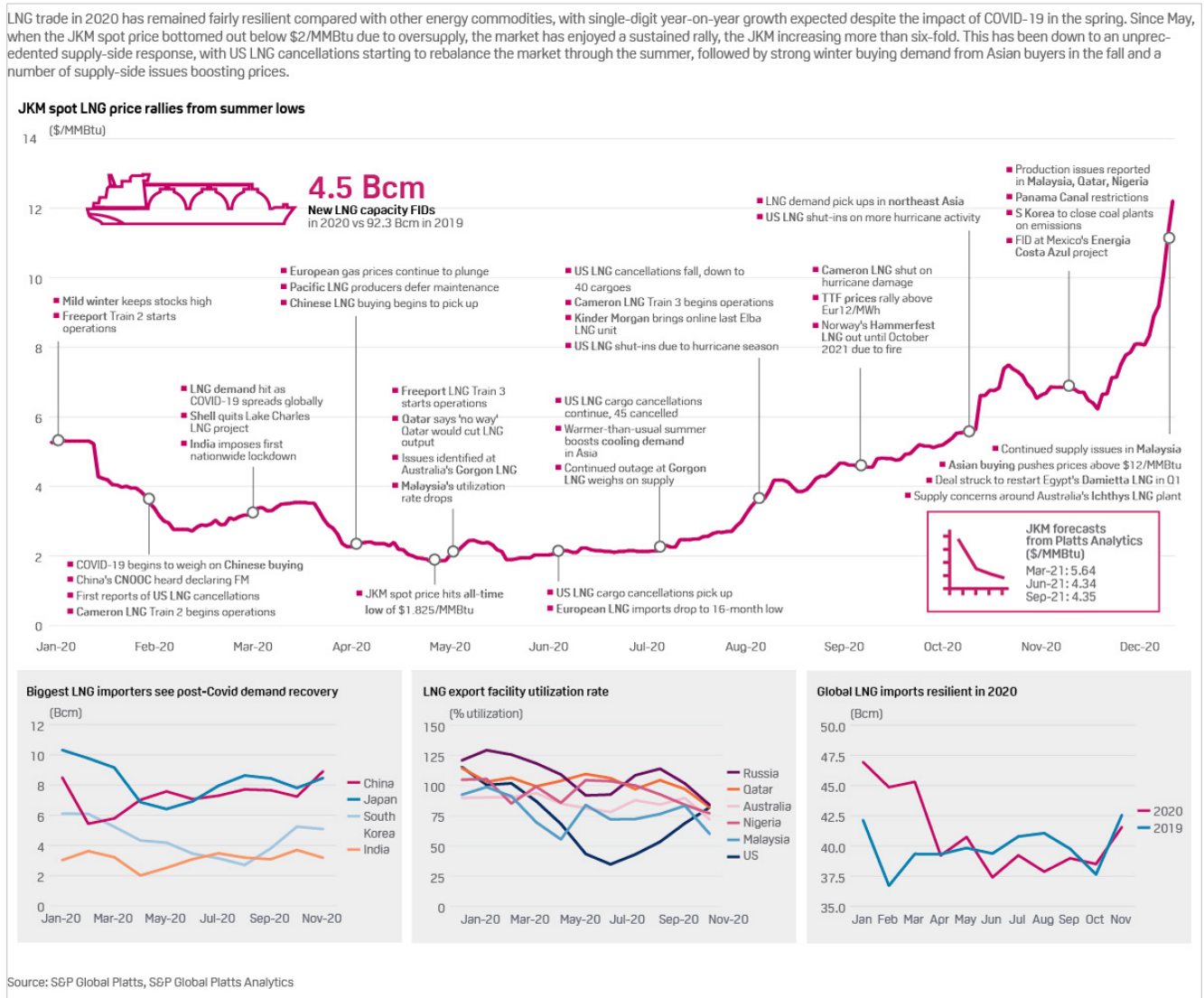
⁹ S&P Global Platts. [Analysis: Malaysia's LNG Supply cuts tighten market but upstream challenges persist](#). 2 July 2020.

¹⁰ AFR. [LNG spot prices spike to unheard-of levels](#). 11 January 2021.

¹¹ AFR. [LNG spot prices spike to unheard-of levels](#). 11 January 2021.

stated that the two lowest bids obtained for the November 2020 delivery were too high, and almost the same as their long term contract prices with Qatargas.¹²

Figure 3: LNG Price Bonanza – JKM Spot Price Rises More Than Six-fold



Source: S&P Global Platts.

Pakistan has faced similar problems with short term spot gas deliveries for January 2021. It was reported in December 2020 that the lowest bids the government received were at 26-30% of Brent per MMBtu in U.S. dollars¹³, which translates into approximately US\$13-15/MMBtu - a considerable rise in price from the middle of 2020 when gas could be sourced in Asia for around US\$2/MMBtu.

¹² S&P Global Platts. Bangladesh cancels Nov LNG tender, likely to cancel Dec on high prices offered. 23 October 2020.

¹³ International The News. Expensive bids received for urgent LNG tender for January. 15 December 2020.

The volatility of the spot market for gas in 2020 has meant that neither Bangladesh nor Pakistan proceeded with their tenders. Spot gas has become simply unaffordable in developing markets as the electricity that it produces is too expensive.

Global Gas Price Volatility Will Increase Going Forward

Volatility in spot prices causes underutilisation of gas-fired power plants as additional gas can sometimes be expensive and unaffordable to source. Having said that, spot prices are far less important for the operation of power stations than contract prices.

Gas contract prices are set internationally via two methods:

1. Gas sold out of Australia and Qatar are typically priced at a percentage of the oil price which in recent years has fallen to around 12% of the oil price. The oil price is inherently unstable as much of the production of oil occurs in politically unstable parts of the globe. Contract prices in the last three years have been between US\$3.50 and \$10.90/MMBtu. Back in February 2014, gas contract prices hit US\$15.45/MMBtu. The volatility in these prices is self-evident as the oil price, on which the gas contracts are set, is volatile.
2. The U.S. uses its own method for gas exports. Prices are set with reference to the U.S. spot market, defined by the price at the Henry Hub. Prices are typically set at the Henry Hub spot gas price x1.2 plus a \$2.50/MMBtu liquefaction fee. In the last three years, contract prices have ranged from approximately US\$4.32 to \$9.35/MMBtu.

The relative stability on the Henry Hub gas exchange over the past three years is about to be unsettled by the combination of oil and gas bankruptcies, the poor financial state of oil and gas companies, and a lack of drilling in the U.S. Volatility and higher prices are more likely going forward and the effects of this will reverberate globally as the U.S. is now a major exporter.

Increased Pricing Volatility Places Over \$50bn of Gas-fired Power Projects at Risk in Developing Markets

Volatility and increasing gas prices have placed 42.6 gigawatts (GW) of proposed LNG power projects in Vietnam, Bangladesh and Pakistan at risk. These projects need LNG import infrastructure such as ports, regasification facilities, and pipelines to get the imported gas to the power stations. We estimate the cost of doing so at over US\$1.25 billion per GW.

In total, Vietnam, Bangladesh¹⁴ and Pakistan have over US\$50bn of gas-fired power projects and associated infrastructure at risk of cancellation.

Figure 4: Select Emerging Markets - LNG Import Terminals and Gas-fired Power Plants At Risk From Volatile LNG Prices

Country	Proposed Power Plants at Risk (GW)
Vietnam	17.6
Bangladesh	5
Pakistan	20
Total	42.6

Source: IEEFA, NTDC Pakistan Long term Power Addition Plan, April 2020.

Conclusion

While gas prices have been low and relatively stable in recent years, recent gas spot prices have exhibited higher volatility and higher prices. With lower levels of drilling, financial instability in the oil and gas industry, and low levels of industry investment, it is likely that a new era of higher prices and more volatility is upon us.

Emerging markets, which almost by definition are more price sensitive, will find the forthcoming gas price environment challenging. They may find their newly installed gas generators being underutilised, while tariffs for gas and electricity customers may rise.

New LNG projects in emerging markets are increasingly becoming unbankable with more volatile contract prices making the electricity produced by gas unaffordable in emerging markets.

The old saying of Caveat Emptor or Buyer Beware is appropriate for all prospective gas buyers.

¹⁴ TBS news. [Bangladesh plans to abandon coal, go for LNG](#). 25 August 2020.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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